Pearson

Mark Scheme (Results)

Spring 2026

PEARSON EDEXCEL GCSE in Mathematics
Foundation 1MA1/3H (Calculator)

Aiming for Grade 9

The following table shows the marks scored on average at certain grades on similar questions from live exams.

For example: A student who achieved a Grade 9 on similar questions from either the Summer 2025 or November 2025 exam sittings achieved on average 33.8 marks from these questions**.**

Grade	**9**	**8**	**7**	**6**	**5**	**4**	**3**
Mark	33.8	25.5	19.0	13.7	9.4	6.4	3.7

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General Marking Guidance

These notes offer general guidance, but the specific notes for examiners appertaining to individual questions take precedence.

1 All candidates must receive the same treatment. Examiners must mark the last candidate in exactly the same way as they mark the first.

Where some judgement is required, mark schemes will provide the principles by which marks will be awarded; exemplification/indicative content will not be exhaustive. When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the response should be sent to review.

2 All the marks on the mark scheme are designed to be awarded; mark schemes should be applied positively. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme. If there is a wrong answer (or no 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.

Questions where working is not required: In general, the correct answer should be given full marks.
Questions that specifically require working: In general, candidates who do not show working on this type of question will get no marks – full details will be given in the mark scheme for each individual question.

3 **Crossed out work**
This should be marked **unless** the candidate has replaced it with an alternative response.

4 **Choice of method**
If there is a choice of methods shown, mark the method that leads to the answer given on the answer line.

If no answer appears on the answer line, mark both methods **then award the lower number of marks.**

5 **Incorrect method**
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review for your Team Leader to check.

6 **Follow through marks**
Follow through marks which involve a single stage calculation can be awarded without working as you can check the answer, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

7 **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 or its context. (eg. an incorrectly cancelled fraction when the unsimplified fraction would gain full marks).

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect (eg. incorrect algebraic simplification).

8 Probability

Probability answers must be given as a fraction, percentage or decimal. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

9 Linear equations

Unless indicated otherwise in the mark scheme, full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously identified in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

10 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and all numbers within the range.

11 Number in brackets after a calculation

Where there is a number in brackets after a calculation E.g. 2 × 6 (=12) then the mark can be awarded **either** for the correct method, implied by the calculation **or** for the correct answer to the calculation.

12 Use of inverted commas

Some numbers in the mark scheme will appear inside inverted commas E.g. "12" × 50 ; the number in inverted commas cannot be any number – it must come from a correct method or process but the candidate may make an arithmetic error in their working.

13 Word in square brackets

Where a word is used in square brackets E.g. [area] × 1.5 : the value used for [area] does **not** have to come from a correct method or process but is the value that the candidate believes is the area. If there are any constraints on the value that can be used, details will be given in the mark scheme.

14 Misread

If a candidate misreads a number from the question. Eg. uses 252 instead of 255; method or process marks may be awarded provided the question has not been simplified. Examiners should send any instance of a suspected misread to review.

Guidance on the use of abbreviations within this mark scheme	
M	method mark awarded for a correct method or partial method
P	process mark awarded for a correct process as part of a problem-solving question
A	accuracy mark (awarded after a correct method or process; if no method or process is seen then full marks for the question are implied but see individual mark schemes for more details)
C	communication mark awarded for a fully correct statement(s) with no contradiction or ambiguity
B	unconditional accuracy mark (no method needed)
oe	or equivalent
cao	correct answer only
ft	follow through (when appropriate as per mark scheme)
sc	special case
dep	dependent (on a previous mark)
indep	independent
awrt	answer which rounds to
isw	ignore subsequent working

Question	Answer	Mark	Mark scheme	Additional guidance
1	70 with reasons	M1	for method to find the size of angle ACD or angle CAD eg $ACD = \frac{180-40}{2}(=70)$ oe or $CAD = \frac{180-40}{2}(=70)$ oe **or** for method to find the size of angle AOC where O is the centre of the circle eg $AOC = 360-90-90-40(=140)$	Correct method can be implied from angles on the diagram if no ambiguity or contradiction Angles must be unambiguously identified. Angle $C = 70$ and Angle $A = 70$ are too ambiguous
		A1	for angle $ABC = 70$	
		C1	(dep on M1) for one reason from Base angles of an isosceles triangle are equal Tangents from an external point are equal in length Angles in a quadrilateral add up to 360 Alternate segment theorem The tangent to a circle is perpendicular to the radius (diameter) The angle at the centre of a circle is twice the angle at the circumference	Underlined words need to be shown Reasons must be clearly linked to the method. Accept "$\angle$" for "angle" and "$\angle s$" for "angles" and "$\llcorner$ " for "triangle" Accept "4-sided shape" for "quadrilateral"
		C1	(dep on M1) for a second reason from Alternate segment theorem The tangent to a circle is perpendicular to the radius (diameter) The angle at the centre of a circle is twice the angle at the circumference	
2	15	P1	for process to find volume of cylinder or volume of cone, eg $\pi \times 8^2 \times \frac{h}{3}$ oe **or** $\frac{1}{3} \times \pi \times 8^2 \times h$ oe **or** $\pi \times 8^2 \times H$ oe **or** $\frac{1}{3} \times \pi \times 8^2 \times 3H$ oe **or** $\pi \times 8^2 \times \frac{x}{4}$ oe **or** $\frac{1}{3} \times \pi \times 8^2 \times \frac{3x}{4}$ oe	h = height of the cone H = height of the cylinder x = total height of the shape Allow any letter for h, H and x, does not have to be defined for the award of the marks The award of all marks requires the substitution of $r = 8$, allow this to be done at a later stage in the question

Question	Answer	Mark	Mark scheme	Additional guidance
2 contd		P1	(dep P1) for setting up an equation in terms of one variable, eg $"\pi\times8^2\times\frac{h}{3}"+"\frac{1}{3}\times\pi\times8^2\times h"=640\pi$ oe or $"\pi\times8^2\times H"+"\frac{1}{3}\times\pi\times8^2\times3H"=640\pi$ oe or $"\pi\times8^2\times\frac{x}{4}"+"\frac{1}{3}\times\pi\times8^2\times\frac{3x}{4}"=640\pi$ oe or $"\pi\times8^2\times\frac{h}{3}"=320\pi$ oe or $"\frac{1}{3}\times\pi\times8^2\times h"=320\pi$ oe or $"\pi\times8^2\times H"=320\pi$ oe or $"\frac{1}{3}\times\pi\times8^2\times3H"=320\pi$ oe or $"\pi\times8^2\times\frac{x}{4}"=320\pi$ oe or $"\frac{1}{3}\times\pi\times8^2\times\frac{3x}{4}"=320\pi$ oe	A correct equation implies the first P1 Allow inconsistent use of π within their equation provided the correct volumes are seen previously
		P1	(dep P2) for process to solve for h or H or x eg $(h=)\frac{640\pi}{"\frac{1}{3}\times\pi\times8^2"+"\frac{1}{3}\times\pi\times8^2"}$ oe eg $(h=)\frac{3\times640\pi}{"64\pi"+"64\pi"}$ or $(H=)\frac{640\pi}{"\pi\times8^2"+"\frac{1}{3}\times\pi\times8^2\times3"}(=5)$ oe eg $(h=)\frac{640\pi}{"64\pi"+"64\pi"}(=5)$ or $(x=)\frac{640\pi}{"\pi\times8^2\times\frac{1}{4}"+"\frac{1}{3}\times\pi\times8^2\times\frac{3}{4}"}(=20)$ oe eg $(x=)\frac{640\pi}{"32\pi"}(=20)$	Can be an equation in the form $ah = p$ or $bH = q$ or $cx = r$ where a or b or c is an integer

Question	Answer	Mark	Mark scheme	Additional guidance
2 contd		A1	cao	Award 0 marks for a correct answer with no (or incorrect) supportive working
3	$-\frac{1}{2}, 2, 1$	M1 A1	scale factor $-\frac{1}{2}$ correct **or** for centre 2, 1 cao	May be shown on diagram provided no contradiction with answer lines.
4	$\frac{64}{89}$	M1 A1	for $\frac{8+56}{8+56+7+18}$ or for $\frac{64}{n}$, $n > 64$ or $\frac{"8+56"}{n}$, $n >$ "8 + 56" or for $\frac{m}{89}$, $m < 89$ or $\frac{m}{"8+56+7+18"}$, $m <$ "8 + 56 + 7 + 18" or for 64 : 89 for $\frac{64}{89}$ oe	 Accept any equivalent fraction, decimal form, 0.71(9…) or percentage form 71(.9…)% rounded or truncated to at least 2 significant figures
5	Inequality shown	B1	for line with arrow drawn to left of 1 with solid circle at 1	

Question	Answer	Mark	Mark scheme	Additional guidance
6	(12, –8)	P1	for process to rearrange the equation to give y in terms of x, eg $y=\frac{3x-52}{2}$ **or** $y=\frac{3}{2}x-26$ **or** $m=\frac{3}{2}$	Condone an incorrect value for the y intercept ($=c$)
		P1	for process to find gradient of OP, eg $-1\div$ "$\frac{3}{2}$" $(=-\frac{2}{3})$ **or** $-1\div[m]$	Where $[m]$ is clearly identified as the gradient of the straight line $3x-2y=52$ Allow 0.66(6…) or 0.67 for $\frac{2}{3}$ throughout
		P1	(dep on equation of the form $y=\frac{-1}{[m]}x$ for the radius may be implied in subsequent working) for starting to solve $3x-2y=52$ with $y=\frac{-1}{[m]}x$ simultaneously to find the value of x or y eg substituting $y=\frac{-2}{3}x$ or $y=\frac{-1}{[m]}x$ into $y=\frac{3}{2}x-26$ or $3x-2y=52$ or an equation of the form $y=\frac{3}{2}x+c$ eg $-\frac{2}{3}x=\frac{3}{2}x-26$ **or** $3x-2\left(-\frac{2}{3}x\right)=52$ **or** $-\frac{2}{3}x=\frac{3}{2}x+c$ **or** $-\frac{1}{[m]}x=\frac{3}{2}x-26$ **or** $3x-2\left(-\frac{1}{[m]}x\right)=52$ **or** $-\frac{1}{[m]}x=\frac{3}{2}x+c$	Where $[m]$ is clearly identified as the gradient of the straight line $3x-2y=52$ Can be done by elimination Award P1 for a correct method to eliminate x or y: coefficient of x or y the same and correct operator to eliminate selected variable eg $9x-6y=156$ $\quad$ $6x-4y=104$ $+\ 4x+6y=0$ $\quad$ $-\ 6x+9y=0$ $(13x=156)$ $\quad$ $(-13y=104)$
		A1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
7	$\frac{15}{4}$	P1	for process to find $\overrightarrow{BC}$ or $\overrightarrow{CB}$, eg $\overrightarrow{BC} = -3\mathbf{b} + \mathbf{a} + 2\mathbf{b}$ oe (= $\mathbf{a} - \mathbf{b}$) **or** $\overrightarrow{CB} = -2\mathbf{b} - \mathbf{a} + 3\mathbf{b}$ oe (= $-\mathbf{a} + \mathbf{b}$)	Vectors must be unambiguously identified Accept BC for $\overrightarrow{BC}$ etc throughout Allow a for **a** and b for **b** throughout Vectors could be written on the diagram and may be in either direction. Throughout, do not condone missing brackets unless recovered Follow through candidates $\overrightarrow{BC}$ or $\overrightarrow{CB}$ provided full method to find subsequent vectors is clearly shown A correct expression for $\overrightarrow{BN}$ or $\overrightarrow{NB}$ or $\overrightarrow{CN}$ or $\overrightarrow{NC}$ implies the previous P mark Follow through candidates $\overrightarrow{BN}$ or $\overrightarrow{NB}$ or $\overrightarrow{CN}$ or $\overrightarrow{NC}$ provided full method to find subsequent vectors is clearly shown May use $\overrightarrow{NM}$ or $\overrightarrow{PM}$ or $\overrightarrow{PN}$ Allow equivalent vectors throughout eg $\overrightarrow{MP} = \frac{1}{2}\mathbf{a} + 2\mathbf{b} + \mu(\mathbf{b})$ This mark may be awarded without the previous mark being awarded

Question	Answer	Mark	Mark scheme	Additional guidance
7 contd		P1	for process that uses the ratio 5 : 3, eg $\overrightarrow{BN}=\frac{5}{8}(-3\mathbf{b}+\mathbf{a}+2\mathbf{b})$ $(=\frac{5}{8}\mathbf{a}-\frac{5}{8}\mathbf{b})$ or $\overrightarrow{NB}=-\frac{5}{8}\mathbf{a}+\frac{5}{8}\mathbf{b}$ oe **or** $\overrightarrow{CN}=\frac{3}{8}(-2\mathbf{b}-\mathbf{a}+3\mathbf{b})$ $(=-\frac{3}{8}\mathbf{a}+\frac{3}{8}\mathbf{b})$ or $\overrightarrow{NC}=\frac{3}{8}\mathbf{a}-\frac{3}{8}\mathbf{b}$ oe	
		P1	for a process to find an expression, in terms of **a** and **b**, for $\overrightarrow{MN}$ **or** $\overrightarrow{MP}$ **or** $\overrightarrow{NP}$ eg $\overrightarrow{MN}=-\frac{1}{2}\mathbf{a}+3\mathbf{b}+\frac{5}{8}(\mathbf{a}-\mathbf{b})$ oe $(=\frac{1}{8}\mathbf{a}+\frac{19}{8}\mathbf{b})$ **or** $\overrightarrow{MN}=\frac{1}{2}\mathbf{a}+2\mathbf{b}+\frac{3}{8}(-\mathbf{a}+\mathbf{b})$ oe $(=\frac{1}{8}\mathbf{a}+\frac{19}{8}\mathbf{b})$ **or** $\overrightarrow{MP}=\frac{1}{2}\mathbf{a}+2\mathbf{b}+k(2\mathbf{b})$ oe **or** $\overrightarrow{NP}=\frac{3}{8}\mathbf{a}-\frac{3}{8}\mathbf{b}+k(2\mathbf{b})$ oe	
		P1	for a process to find a **correct** expression, in terms of **a** and **b** for the same vector eg $\overrightarrow{MP}$ or $\overrightarrow{NP}$ **or** parallel vectors eg $\overrightarrow{MP}$ and $\overrightarrow{MN}$ or $\overrightarrow{NP}$ and $\overrightarrow{MN}$ **eg** $\overrightarrow{MP}=\frac{1}{2}\mathbf{a}+2\mathbf{b}+k(2\mathbf{b})$ oe **and** $\overrightarrow{MP}=\lambda\left(\frac{1}{8}\mathbf{a}+\frac{19}{8}\mathbf{b}\right)$ oe **or** $\overrightarrow{NP}=\frac{3}{8}\mathbf{a}-\frac{3}{8}\mathbf{b}+k(2\mathbf{b})$ oe **and** $\overrightarrow{NP}=\lambda\left(\frac{1}{8}\mathbf{a}+\frac{19}{8}\mathbf{b}\right)$ oe **or** $\overrightarrow{MP}=\frac{1}{2}\mathbf{a}+2\mathbf{b}+k(2\mathbf{b})$ oe **and** $\overrightarrow{MN}=\frac{1}{8}\mathbf{a}+\frac{19}{8}\mathbf{b}$ oe **or** $\overrightarrow{NP}=\frac{3}{8}\mathbf{a}-\frac{3}{8}\mathbf{b}+k(2\mathbf{b})$ oe **and** $\overrightarrow{MN}=\frac{1}{8}\mathbf{a}+\frac{19}{8}\mathbf{b}$ oe	Vectors do not have to be simplified May use $\overrightarrow{NM}$ or $\overrightarrow{PM}$ or $\overrightarrow{PN}$ Condone use of same variable for equivalent vector journeys Condone lack of labelling if vector journeys are correctly equated

Question	Answer	Mark	Mark scheme	Additional guidance
			OR for a process to find a **correct** expression in terms of **a** and **b**, for $\overrightarrow{AP}$ or $\overrightarrow{CP}$ using $\overrightarrow{MN}$ $\overrightarrow{AP} = -\frac{1}{2}\mathbf{a} + \mu\left(\frac{1}{8}\mathbf{a} + \frac{19}{8}\mathbf{b}\right)$ oe **or** $\overrightarrow{CP} = -\frac{3}{8}\mathbf{a} + \frac{3}{8}\mathbf{b} + \mu\left(\frac{1}{8}\mathbf{a} + \frac{19}{8}\mathbf{b}\right)$ oe **OR** for a process to find a **correct** expression in terms of **a** and **b** for the same vector $\overrightarrow{BP}$ or $\overrightarrow{OP}$ $\overrightarrow{BP} = \mathbf{a} - \mathbf{b} + k(2\mathbf{b})$ oe **and** $\overrightarrow{BP} = \frac{5}{8}\mathbf{a} - \frac{5}{8}\mathbf{b} + \mu\left(\frac{1}{8}\mathbf{a} + \frac{19}{8}\mathbf{b}\right)$ oe $\overrightarrow{OP} = \mathbf{a} + 2\mathbf{b} + k(2\mathbf{b})$ oe **and** $\overrightarrow{OP} = \frac{1}{2}\mathbf{a} + \mu\left(\frac{1}{8}\mathbf{a} + \frac{19}{8}\mathbf{b}\right)$ oe	May use $\overrightarrow{PA}$ or $\overrightarrow{PC}$ NB: $\overrightarrow{CP} = -\frac{1}{2}\mathbf{a} - 2\mathbf{b} + \mu\left(\frac{1}{8}\mathbf{a} + \frac{19}{8}\mathbf{b}\right)$ May use $\overrightarrow{PB}$ or $\overrightarrow{PO}$
		A1	for $\frac{15}{4}$ oe	Award 0 marks for a correct answer with no supportive working

Question	Answer	Mark	Mark scheme	Additional guidance
8	633	B1	for stating any correct bound, eg 10.35 or 10.45 or 103.5 or 104.5 or 0.165 or 0.175 or 0.0165 or 0.0175	Accept $10.44\dot{9}$ or 10.4499(9…) for 10.45 Accept $0.174\dot{9}$ or 0.17499(9…) for 0.175
		P1	for process to find the upper bound, eg [UB of height] ÷ [LB of thickness] or 104.5 ÷ 0.165 or 10.45 ÷ 0.0165	104 < [UB of height] ≤ 104.5 and 0.165 ≤ [LB of thickness] < 0.17 **or** 10.4 < [UB of height] ≤ 10.45 and 0.0165 ≤ [LB of thickness] < 0.017
			or eg [UB of height] ÷ [LB of thickness] × 10 or 10.45 ÷ 0.165 × 10	**or** 10.4 < [UB of height] ≤ 10.45 and 0.165 ≤ [LB of thickness] < 0.17
		A1	(dep on all previous marks) for an answer of 633 or 633(.33…) clearly coming from working with correct values eg 104.5 ÷ 0.165 = 633	Condone 630 from a correct calculation If correct answer is seen and then incorrectly rounded award full marks Award 0 marks for a correct answer with no (or incorrect) supportive working

Question	Answer	Mark	Mark scheme	Additional guidance
9	$3:7+4\sqrt{3}$	P1	for first step in process to find the length of a side of triangle ACF, eg $BC=\dfrac{x}{\sin 60}$ or $BC=\dfrac{2\sqrt{3}}{3}x$ or $DC=\dfrac{x}{\tan 60}$ oe eg $DC=x\tan 30$ or $DC=\dfrac{\sqrt{3}}{3}x$ or $AM=x\sin 60$ oe eg $AM=\sqrt{x^2-(0.5x)^2}$ or $AM=\dfrac{\sqrt{3}}{2}x$	For reference $x = AG = AB$ Must have expression for BC (or FG) or DC (or FE) or AM or where M is where perpendicular from A meets BG May use cos30 for sin60
		P1	for process to find area of ABG or area of ACF, eg (Area ABG =) $\frac{1}{2}\times x\times x\times \sin 60$ oe eg $"\dfrac{\sqrt{3}}{2}x"\times x\div 2$ or $\dfrac{\sqrt{3}}{4}x^2$ or (Area ACF =) $\dfrac{1}{2}\times\left(x+"\dfrac{2\sqrt{3}}{3}x"\right)\times\left(x+"\dfrac{2\sqrt{3}}{3}x"\right)\times\sin 60$ oe **or** for process to find ratio of sides, eg $AB:AC=x:x+"\dfrac{2\sqrt{3}}{3}x"$ oe	For reference may use $\dfrac{1}{\sqrt{3}}$ for $\dfrac{\sqrt{3}}{3}$ and $\dfrac{2}{\sqrt{3}}$ for $\dfrac{2\sqrt{3}}{3}$ and $\dfrac{\sqrt{3}}{2}$ for sin60 etc throughout
		P1	for process to find the areas of ABG **and** area of ACF , eg $\frac{1}{2}\times x\times x\times \sin 60$ **and** $\dfrac{1}{2}\times\left(x+"\dfrac{2\sqrt{3}}{3}x"\right)\times\left(x+"\dfrac{2\sqrt{3}}{3}x"\right)\times\sin 60$ oe or for process to find ratio of areas, eg $x^2:\left(x+"\dfrac{2\sqrt{3}}{3}x"\right)^2$ or $1:\left(1+"\dfrac{2\sqrt{3}}{3}"\right)^2$ oe	For reference Area $ABG=\dfrac{\sqrt{3}}{4}x^2$ oe Area $ACF=x^2+\dfrac{7\sqrt{3}}{12}x^2$ oe

Question	Answer	Mark	Mark scheme	Additional guidance
9 contd		P1	for process to expand the square, eg $\left(1+"\frac{2\sqrt{3}}{3}"\right)^2 = 1+\frac{4\sqrt{3}}{3}+\frac{4}{3}$ oe or $\left(x+"\frac{2\sqrt{3}}{3}x"\right)^2 = x^2+\frac{4\sqrt{3}}{3}x^2+\frac{4}{3}x^2$ oe **or** for $\left(1(x)+"\frac{2\sqrt{3}}{3}(x)"\right)\left(1(x)+"\frac{\sqrt{3}}{2}(x)"\right) = 2(x^2)+\frac{\sqrt{3}}{2}(x^2)+\frac{2\sqrt{3}}{3}(x^2)$ oe	May be implied by a correct simplified area for ACF eg $x^2+\frac{7\sqrt{3}}{12}x^2$
		A1	for $3:7+4\sqrt{3}$ oe in required form	Award 0 marks for a correct answer with no (or incorrect) supportive working
10 (a)	7, (2), –1, –2 (–1), 2, (7)	B2	for all values correct	
		(B1	for 2 or 3 values correct)	
(b)	Graph drawn	M1	ft (dep on B1 in (a)) for plotting at least 5 of the points from their table correctly	Use overlay
		A1	for correct curve drawn	Accept a freehand curve drawn that is not made of line segments Ignore anything drawn outside the required range

Question	Answer	Mark	Mark scheme	Additional guidance
10 (c)	–1.2, 3.2	M1	for drawing the line $y = 3$ **or** reading off the intersection(s) where $y = 3$ **or** one correct solution **or** both solutions given as coordinates, eg (–1.2, 3.2) **or** (–1.2, 3) and (3.2, 3)	ft their graph for this mark Accept these coordinates reversed
		A1	for one value in each of the ranges –1.3 to –1.2 and 3.2 to 3.3 or ft (dep M1 in (b)) their quadratic graph	Award A0 for coordinate pairs or solutions given as an inequality eg $–1.2 < x < 3.2$ Answers to 3 decimal places can be indicative of an algebraic method and score 0 marks
11 (a)	Proof	P1	for process to expand at least one square, to obtain 4 terms will all 4 terms correct without considering signs or for 3 terms out of 4 correct with correct signs eg $(5m + 2)^2 = 25m^2 + 10m + 10m + 4$ oe or $(5m – 2)^2 = 25m^2 – 10m – 10m + 4$ oe **or** for $\{(5m+2)+(5m-2)\}\{(5m+2)-(5m-2)\}$	NB: $(5m + 2)^2 = 25m^2 + 20m$ or $20m + 4$ can be considered 3 terms out of 4 correct with correct signs $(5m – 2)^2 = 25m^2 – 20m$ or $–20m + 4$ can be considered 3 terms out of 4 correct with correct signs
		P1	for complete process to expand brackets correctly eg $25m^2 + 10m + 10m + 4 – 25m^2 + 10m + 10m – 4$ $(= 40m)$ **or** for $(5m+2+5m-2)(5m+2-5m+2)$ $(=(10m)(4)=40m)$	Does not have to be simplified at this stage. Must have no errors Condone recovered brackets eg $25m^2 + 20m + 4 – 25m^2 – 20m + 4$ provided this is simplified to $40m$
		C1	for showing statement is correct (with supportive evidence) eg $40m = 20(2m)$ or $40m \div 20 = 2m$ or $40m$ **and** 40 is a multiple of 20 oe eg 20 is a factor of 40 or $40m$ **and** ‘is a multiple of 20’	Condone recovered brackets on $25m^2 + 20m + 4 – 25m^2 – 20m + 4 = 40m$

Question	Answer	Mark	Mark scheme	Additional guidance
11 (b)	No, supported	C1	No with reason **Acceptable examples** eg when $m = 1$, $40m = 40$ **and** 80 is not a factor (of 40) oe 80 is not always a factor of $40m$ It only works for even numbers (of m) It does not work for odd numbers (of m) It does not work if $m = 1$ oe **Not acceptable examples** 80 is not a factor of $(5m + 2)^2 - (5m - 2)^2$ 80 is not a factor of 40 / 80 is not a factor of $40m$ 80 is a multiple of 40 not a factor oe $40m = 80(0.5m)$ or $40m \div 80 = 0.5m$ $40m$ divided by 80 is a fraction $40m \div 80 = 0.5$ It works for even numbers (of m) It works for odd numbers (of m) It works when $m = 2$ oe eg 80 is a factor when $m = 2$ Yes, …	

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