



Pearson

Mark Scheme

Specimen Paper

Pearson Edexcel International GCSE
In Mathematics A (4MA1) Paper 1H

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Specimen Paper

Publications Code 4MA1_1H_EAM_MS

All the material in this publication is copyright

© Pearson Education Ltd 2017

General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.
- **Types of mark**
 - M marks: method marks
 - A marks: accuracy marks
 - B marks: unconditional accuracy marks (independent of M marks)
- **Abbreviations**
 - cao – correct answer only
 - ft – follow through
 - isw – ignore subsequent working
 - SC - special case
 - oe – or equivalent (and appropriate)
 - dep – dependent
 - indep – independent
 - eeoo – each error or omission

- **No working**

If no working is shown then correct answers normally score full marks

If no working is shown then incorrect (even though nearly correct) answers score no marks.

- **With working**

If there is a wrong 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.

If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks.

Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks.

If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.

If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

If there is no answer on the answer line then check the working for an obvious answer.

- **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: eg. Incorrect cancelling of a fraction that would otherwise be correct.

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect eg algebra.

Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

- **Parts of questions**

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

International GCSE Maths 1H

Apart from Questions 4d, 10 (where the mark scheme states otherwise), the correct answer, unless clearly obtained by an incorrect method, should be taken to imply a correct method.

Q	Working	Answer	Mark	Notes
1	$5400 \div (5 + 3 + 4) (=450)$			M1
	“450” $\times 5$ or “450” $\times 3$ or “450” $\times 4$			M1
		2250, 1350, 1800	3	A1
				Total 3 marks

2	$120 \div 100^2 (=0.012)$ or $810 \div 120 (=6.75)$			M1
	$810 \div “0.012”$ or “6.75” $\times 100^2$			M1
		67 500	3	A1
				Total 3 marks

3	a	$140 = 2 \times 2 \times 5 \times 7$; $245 = 5 \times 7 \times 7$			M1	or lists at least 3 factors of each number (other than 1 and the number) (1, 2, 4, 10, 14, 35, 70, 140) (1, 5, 7, 35, 49, 245)
			35	2	A1	
	b	50, 100, 150, 200, 250, 300, 350, 400 and 80, 160, 240, 320, 400 OR $2 \times 5 \times 5$ and $2 \times 2 \times 2 \times 2 \times 5$			M1	
		$2 \times 2 \times 2 \times 2 \times 5 \times 5$ or 400			M1	LCM found
			16 40	3	A1	or 4 40 pm
						Total 5 marks

4	a		$3y(2y + 5)$	2	B2	B1 for $3(2y^2 + 5y)$ or $y(6y + 15)$
	b	$m^2 + 9m - 5m - 45$			M1	M1 for 3 terms correct or 4 terms correct ignoring signs or $m^2 + 4m + \dots$ or $\dots + 4m - 45$
			$m^2 + 4m - 45$	2	A1	
	c	$2s = at^2$ or $\frac{s}{a} = \frac{1}{2}t^2$ or $\frac{2s}{a} = t^2$			M1	for a correct first step
			$t = (\pm)\sqrt{\frac{2s}{a}}$	2	A1	
	d	$6x - 5 = 2(x + 1)$ or $6x - 5 = 2x + 2$			M1	
		$6x - 2x = 2 + 5$			M1	
			1.75	3	A1	oe eg. $\frac{7}{4}$ dep on at least M1 scored
						Total 9 marks

5	$1 - \frac{5}{8} \left(= \frac{3}{8} \right)$ or $100\% - 80\% (=20\%)$ or $\frac{1}{5} + \frac{3}{8} \left(= \frac{23}{40} \right)$				M1	may see decimal equivalents
	$\frac{4}{5} - \frac{3}{8}$ or $\frac{5}{8} - \frac{1}{5}$ or $1 - \frac{23}{40}$				M1	may see decimal or percentage equivalents
			$\frac{17}{40}$	3	A1	
						Total 3 marks

6	a	$0.03 \times 180\,000 (=5400)$			M1	M2 for $1.03 \times 180\,000$
		“5400” + 180 000			M1 dep	
			185 400	3	A1	
	b	$6630 = 85\% \text{ oe or } \frac{6630}{85} (= 78)$			M1	M2 for $6630 \div 0.85$
		$6630 \div 85 \times 100 \text{ or } “78” \times 100$			M1 dep	
			7800	3	A1	
						Total 6 marks

7		$42 \times 7 (=294) \text{ or } 8 \times 50 (=400)$			M1	
		$8 \times 50 - 42 \times 7$			M1	
			106	3	A1	
						Total 3 marks

8	a		93 000 000	1	B1	
	b		Singapore	1	B1	
	c	$1.382 \times 10^9 - 1.327 \times 10^9 \text{ oe or } 55\,000\,000$			M1	or for $5.5 \times 10^n \quad n \neq 7$
			5.5×10^7	2	A1	
						Total 4 marks

9	e.g. $(h^2 =) 14.5^2 - 10^2$ or $\cos x = \frac{10}{14.5}$			M1 start to find height or angle
	e.g. $(h =) \sqrt{14.5^2 - 10^2}$ (=10.5) or $(x =) \cos^{-1}\left(\frac{10}{14.5}\right)$ (=46.3...)			M1 complete method to find height or angle
	e.g. $\frac{1}{2} \times 20 \times "10.5"$ or $\frac{1}{2} \times 20 \times 14.5 \times \sin("46.3...")$			M1 (dep on M1) method to find area
		105	4	A1 cao
Total 4 marks				

10	$21x + 9y = 60$ $21x + 35y = 21$ or $-26y = 39$ $y = -1.5$	$35x + 15y = 100$ $9x + 15y = 9$ $26x = 91$ $x = 3.5$			M1 for method to eliminate one variable (condone one arithmetic error)
				A1 one variable correct dep on M1	
				M1 (dep on M1) for method to find second variable	
		$x = 3.5, y = -1.5$	4	A1 both variables dep on at least M1	
Total 4 marks					

11	median = 26 or LQ = 20 or UQ = 29			M1
	iqr = 9 and median = 26			A1
				B1 ft comparison of IQR eg. English results were more spread out
		median = 26; iqr = 9 and two comparisons	4	B1 ft comparison of median eg. Maths results were higher NB. In order to award both marks, at least one of the comparisons must be in context
				Total 4 marks

12	$(1 + 4)^2 (= 25)$			M1
	"5" ² × 8 – 8 oe			M1 complete method
		192	3	A1
				Total 3 marks

13	$\frac{7-1}{4-1} \left(= \frac{8}{3} \right)$			M1 for a method to find gradient
	e.g. $7 = \frac{8}{3} \times 4 + c$ or $y - 7 = \frac{8}{3}(x - 4)$ $c = -\frac{11}{3}$			M1 for a method to find c
	$y = \frac{8}{3}x - \frac{11}{3}$			M1 dep on M2
		$8x - 3y = 11$ oe	4	A1
				Total 4 marks

14	Angle DBA = 43° or Angle DAB = 90°			M1
	$180 - 90 - 43 (=47)$			M1
				A1
		47 with reasons	5	B2 for full reasons Angles in the same segment are equal; Angle in a semi-circle is a right angle Angles in a triangle add up to 180° (B1 for a correct and relevant reason using a circle theorem)
				Total 5 marks

15	a	$P = \frac{k}{\sqrt{q}}$			M1
		$10 = \frac{k}{\sqrt{0.0064}}$ or $k = 0.8$			M1 implies first M1
			$P = \frac{0.8}{\sqrt{q}}$	3	A1 oe with P as the subject
	b	$\left(\frac{0.8}{20}\right)^2$			M1
			0.0016oe	2	A1
					Total 5 marks

16		$3 \times (3 + 8.5) = 5 \times PR$ or $3 \times (3 + 8.5) = 5 \times (5 + PQ)$			M1
		$(3 \times (3 + 8.5)) \div 5 - 5$			M1 for a complete method for PQ
			1.9	3	A1
					Total 3 marks

17	a	$x^2 + 2x - 6x - 5 > 0$ or $x^2 - 4x - 5 > 0$			M1
		$(x - 5)(x + 1)$			M1
			$x < -1, x > 5$	3	A1
	b			1	B1 ft from (a)
					Total 4 marks

18		$\frac{1}{2} \times \frac{4}{3} \times \pi \times 6^3$ or $\pi \times 6^2 \times t$ or $\pi \times 6^2 \times 10$			M1 for one expression for an appropriate volume
		$\frac{1}{2} \times \frac{4}{3} \times \pi \times 6^3 + \pi \times 6^2 \times 10$			M1 for total volume
		$\pi \times 6^2 \times t = \frac{1}{2} \times \frac{4}{3} \times \pi \times 6^3 + \pi \times 6^2 \times 10$			M1 for forming a correct equation
			7	4	A1
					Total 4 marks

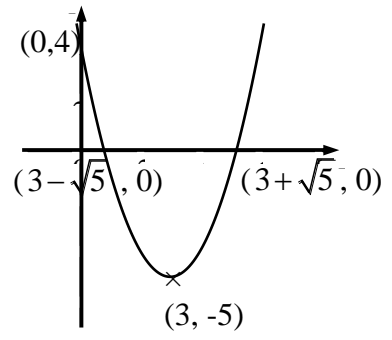
19	e.g. $8.8 \times 5 (=44)$			M1 for finding area of 50 – 55 bar
	e.g. $3.4 \times 10 (=34) + 7.2 \times 20 (=144) + 8.8 \times 5 (=44) + 4 \times 15 (=60) + 1.8 \times 10 (=18) (=300)$			M1 for method to find total area (condone two errors)
	$\frac{"44"}{"300"} \times 150$			M1 (dep on M2) for complete method
		22	4	A1
				Total 4 marks

20	eg. $2n + 1, 2n + 3$			M1 for algebraic representation of two consecutive odd numbers
	$(2n + 3)^2 - (2n + 1)^2 =$ $(4n^2 + 6n + 9) - (4n^2 + 2n + 1)$			M1 for correct expansion of at least one bracket
	$8n + 8$			M1 for simplified answer, may be factorised
		proof	4	A1 for completion of proof
				Total 4 marks

21	e.g. $\frac{dy}{dx} = 2x - 6$ or $(x - 3)^2 - 3^2 + 4$ or $\frac{'3 + \sqrt{5}' + '3 - \sqrt{5}'}{2}$			M1
	$(x - 3)^2 - 5$ or $x = 3$			A1 (ft providing previous M1 scored) for (3, -5)
	eg. $x = \frac{- -6 \pm \sqrt{(-6)^2 - 4 \times 1 \times 4}}{2 \times 1}$ or $x = 3 \pm \sqrt{3^2 - 4}$ or $(x - 3)^2 = 5$			M1 for correct method to find roots
	$x = 3 \pm \sqrt{5}$			A1 or exact equivalents
		Correct graph	6	B2 for fully correct labelled graph (see end of mark scheme) (B1 for parabola intercepting y-axis at (0, 4))
				Total 6 marks

22	$\frac{7}{x}$ or $\frac{x-7}{x-1}$			M1 for a correct expression for one probability
	$2 \times \frac{7}{x} \times \frac{x-7}{x-1} = \frac{7}{15}$			M1 for equation formed
	e.g. $x^2 - 31x + 210 = 0$ or $7x^2 - 217x + 1470 = 0$			M1 correct quadratic ready to solve
	e.g. $(x-21)(x-10) = 0$ or $\frac{-31 \pm \sqrt{(-31)^2 - 4 \times 210}}{2}$			M1 method to solve quadratic equation
		21	5	A1 21 must be selected as final answer
Total 5 marks				

23	eg. diagram drawn showing relative positions of A, B and C can be implied by angle $ABC = 55^\circ$			M1 interprets information
	$\frac{\sin CAB}{95} = \frac{\sin 55}{180}$			M1
	$CAB = \sin^{-1}\left(\frac{95 \sin 55}{180}\right)$ or $CAB = 25.6(1\dots)$			M1 dep
	$AB = \frac{180}{\sin 55} \times \sin(180 - 55 - "25.6")$			M1 dep or for $\sqrt{180^2 + 95^2 - 2 \times 180 \times 95 \times \cos(180 - 55 - "25.6")}$
		217	5	A1
Total 5 marks				



Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London, WC2R 0RL, United Kingdom