



**General Certificate of Secondary Education
Practice Paper
Set 4**

Mathematics (Linear) B

Paper 2 Higher Tier 4365/2H

Mark Scheme

Mark Schemes

Principal Examiners have prepared these mark schemes for practice papers. These mark schemes have not, therefore, been through the normal process of standardising that would take place for live papers.

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Glossary for Mark Schemes

GCSE examinations are marked in such a way as to award positive achievement wherever possible. Thus, for GCSE Mathematics papers, marks are awarded under various categories.

- M** Method marks are awarded for a correct method which could lead to a correct answer.
- A** Accuracy marks are awarded when following on from a correct method. It is not necessary to always see the method. This can be implied.
- B** Marks awarded independent of method.
- Q** Marks awarded for quality of written communication. (QWC)
- M Dep** A method mark dependent on a previous method mark being awarded.
- B Dep** A mark that can only be awarded if a previous independent mark has been awarded.
- ft** Follow through marks. Marks awarded following a mistake in an earlier step.
- SC** Special case. Marks awarded within the scheme for a common misinterpretation which has some mathematical worth.
- oe** Or equivalent. Accept answers that are equivalent.
eg, accept 0.5 as well as $\frac{1}{2}$

Paper 2 Higher Tier

Q	Answer	Mark	Comments
1	1.5 or 0.5 seen	B1	
	300×1.5 or 250×1.5 or 140×1.5	M1	oe
	450 and 375 and 210	A1	
2	$x - 2 + 2x + 1 + x - 2 + 2x + 1$	M1	oe
	$6x - 2 = 43$	M1	oe Need not be simplified
	$6x = 43 + 2$	M1	Collecting terms
	7.5	A1	oe
	Fully correct method shown for solving their equation	Q1	Strand (ii)
3	Two columns and two rows	B1	
	At least 0, 1, 2	B1	
	Two-way table drawn with all possibilities exhausted	B1	
4	$360 \div 5$ or 540 seen	M1	
	$180 - \text{their } 72$ or $540 \div 5$	M1	
	Their 108 ($\div 2$)	M1	
	54	A1	
5(a)	$\frac{1}{2} - \frac{1}{3}$ or $\frac{2}{3} - \frac{1}{2}$ or $\frac{1}{6}$	M1	oe
	Add $\frac{1}{6}$	A1	
5(b)	$\frac{5}{6}$	B1	

Q	Answer	Mark	Comments
6	(4, 6)	B1	
	(6, 1)	B1	SC1 For coordinates giving a parallelogram
7	$\pi \times 30$	M1	
	$\pi \times 30 \times 20$	M1	
	$75 (\times 100) \div (\pi \times 30 \times 20)$ or $75 \div (\pi \times 30 \times 20)$	M1	
	3.97... or 3.9(7...)	A1	
	4	Q1ft	Strand (i) - Rounding up
8	$1 - 0.992$ or 0.008	M1	0.992×2000 or 1984
	Their 0.008×2000	M1Dep	2000 – their 1984
	16	A1	
9(a)	$15 < h \leq 20$	B1	
9(b)	Mid values seen 2.5, 7.5, 12.5, 17.5, 22.5	M1	Allow one error
	$\sum fx$ seen	M1	At least one correct product $2.5 \times 31 (= 77.5)$ $7.5 \times 34 (= 255)$ $12.5 \times 54 (= 675)$ $17.5 \times 63 (= 1102.5)$ $22.5 \times 68 (= 1530)$
	Their $3640 \div 250$	M1	
	14.56 or 14.6	A1	Accept 15 with working shown
9(c)	Valid reason	B1	
	Valid working to support reason	B1	

Q	Answer	Mark	Comments
10	$10 \times 6 \times 2 (= 120)$	M1	
	Their $120 \times 46 (= 5520)$	M1	oe
	Their 5520×0.85	M1	
	4692	M1	oe
	£46.92	A1	
11(a)	-2	B1	
	7	B1	
11(b)	Points plotted correctly	B1ft	$\pm \frac{1}{2}$ square
	Smooth curve through their points	B1ft	
11(c)	Reads off their points of intersection with the x -axis	B2ft	B1ft For each $\pm \frac{1}{2}$ square
12(a)	$\frac{1}{2} (65 + 38) 80$	M1	
	4120	A1	
12(b)	Their 4120×110	M1	
	453200	A1	
13(a)	Triangle drawn on graph or equivalent readings taken	M1	eg 6 across and 5 up
	$\frac{6}{5}$	A1	
13(b)	$y = \frac{6}{5}x + 2$	B1 ft	
14	1 gallon = 4.5 litres or better seen or implied	B1	oe
	$36 \div$ their 4.5	M1	
	Their 8×30	M1	
	240	A1	

Q	Answer	Mark	Comments
15	$5.5^2 + 3.5^2$	M1	$5.5 \div 2 (= 2.75)$ and $3.5 \div 2 (= 1.75)$
	$\sqrt{5.5^2 + 3.5^2}$	M1Dep	$2.75^2 + 1.75^2$
	Their $6.5(19\dots) \div 2$	M1Dep	$\sqrt{2.75^2 + 1.75^2}$
	3.2(59...)	A1	
	3.3	B1ft	
16(a)	$2x + x + 90$	M1	oe
	$3x + 90 = 180$	M1Dep	oe
	$(x) = 30$	A1	
16(b)	$2x + y + 90 = 180$ or $2x + y + y + 90 = 180$ or Their $60 + 2y = 90$ or Their $x \div 2$	M1	
	15	A1ft	
17(a)	$(x - 5)(x - 3)$	B2	B1 For $(x + a)(x + b)$ where $ab = \pm 15$
17(b)	$(2x + 1)(x - 3)$	B2	B1 For $(2x + c)(x + d)$ where $cd = \pm 3$
	$\frac{x - 5}{2x + 1}$	B1	
18	$15^{\frac{2}{3}} = 6.08\dots$ $215^{\frac{1}{3}} = 5.9(9\dots)$ $20^{\frac{3}{5}} = 6.03\dots$	M1	Allow one error
	$215^{\frac{1}{3}} \quad 20^{\frac{3}{5}} \quad 15^{\frac{2}{3}}$	A1	

Q	Answer	Mark	Comments
19	13 or 14 14 or 15 9 or 10	B3	Total must equal 74 or 75 for B3 eg 14 14 9 13 14 11 gives 75 total
	13 14 or 15 10 or 11		
20	$(x - 1)$ or $(x - 7)$ seen	M1	$0 = 1 + b = c$ or $0 = 49 + 7b + c$
	$(x - 1)(x - 7)$ $x^2 - 8x + 7$	M1	
	$b = -8$ and $c = 7$	A1	
21	$433.50 \div 0.85 (= 510)$	M1	oe
	$433.50 \div 0.85^2$ or $510 \div 0.85$	M1	
	600	A1	
22	$\frac{2}{10}$ or $\frac{5}{10}$ or $\frac{3}{10}$ seen	M1	oe Tree diagram drawn with correct probability on at least one branch
	$\frac{2}{10} \times \frac{1}{9}$ or $\frac{5}{10} \times \frac{4}{9}$ or $\frac{3}{10} \times \frac{2}{9}$	M1Dep	oe Tree diagram drawn with correct probability on at least one pair eg, $\frac{2}{10}$ and $\frac{1}{9}$
	$\frac{2}{10} \times \frac{1}{9} + \frac{5}{10} \times \frac{4}{9} + \frac{3}{10} \times \frac{2}{9}$	M1Dep	Tree diagram with all products seen
	$\frac{28}{90}$	A1	oe SC2 For $\frac{28}{100}$

Q	Answer	Mark	Comments
23	$\frac{(2n+1)(n+1)}{2n(n+1)}$ or $\frac{n \times 2n}{2n(n+1)}$	M1	With or without denominator
	$\frac{(2n+1)(n+1)}{2n(n+1)} - \frac{2n^2}{2n(n+1)}$	M1	With or without denominator
	$\frac{2n^2 + 3n + 1}{2n(n+1)} - \frac{2n^2}{2n(n+1)}$	M1	
	$\frac{2n^2 + 3n + 1 - 2n^2}{2n(n+1)}$ $\left(= \frac{3n+1}{2n(n+1)} \right)$	A1	
24	$\frac{4}{3} \times \pi \times 15^3 (\div 2)$	M1	
	$\frac{4}{3} \times \pi \times 15^3 \div 2$ or 14137.16694 ($\div 2$)	M1Dep	
	7068.(58) or 7100 or 7070	A1	
25	6.5 or 8.5 seen	B1	
	$6.5^2 + 8.5^2 - 2 \times 6.5 \times 8.5 \cos 110$	M1	
	$\sqrt{6.5^2 + 8.5^2 - 2 \times 6.5 \times 8.5 \cos 110}$	M1Dep	
	12.3 ...	A1	
26(a)	3.23×10^6	B2	B1 For answer not in standard form eg, 3230000
26(b)	1.992×10^{12}	B2	B1 For answer not in standard form eg, 192000000000

Q	Answer	Mark	Comments
27	$\frac{-(-4) = \sqrt{(14)^2 - 4(2)(-5)}}{2(2)}$	M1	Allow error
	$= \frac{-(-4) = \sqrt{(14)^2 - 4(2)(-5)}}{2(2)}$	A1	
	2.87 or - 0.87	A1	