

Practice Tests Set 22 – 1H mark scheme

Qn	Working	Answer	Mark	Notes
1 (a)		0.45	1	B1 oe eg $\frac{9}{20}, \frac{45}{100}, 45\%$
(b)	eg $1 - (0.25 + 0.2 + 0.2) (= 0.35)$ or $1 - ("0.45" + 0.2) (= 0.35)$ or $300 \times (0.25 + 0.2 + 0.2) (= 195)$		3	M1 allow use of their "0.45" from part (a), check the table
	eg $300 \times "0.35"$ or $300 - "195"$			M1 for a complete method
		105		A1 cao (award $\frac{105}{300}$ M2 only)
				Total 4 marks

Qn	Working	Answer	Mark	Notes
5 (a)		$3c^4 + 12c^3$	2	B2 for $3c^4 + 12c^3$ (B1 for $3c^4$ or $12c^3$)
				Total 2 marks

Qn	Working	Answer	Mark	Notes
6	$\frac{8}{3}(+)\frac{15}{4}$ or $(2)\frac{8}{12}(+)(3)\frac{9}{12}$ or $(2)\frac{8a}{12a}(+)(3)\frac{9a}{12a}$		3	M1 for correct improper fractions or fractional part of numbers written correctly over a common denominator
	eg $\frac{8 \times 4 + 15 \times 3}{3 \times 4}$ or $\frac{32}{12} + \frac{45}{12}$ or $\frac{32a}{12a} + \frac{45a}{12a}$ or $2\frac{8}{12} + 3\frac{9}{12} = 5\frac{17}{12}$ oe			M1 for correct fractions with a common denominator of 12 or a multiple of 12
	$\frac{32}{12} + \frac{45}{12} = \frac{77}{12} = 6\frac{5}{12}$ or $5\frac{17}{12} = 6\frac{5}{12}$ or if shows $6\frac{5}{12} = \frac{77}{12}$ at the beginning then show that the addition comes to $\frac{77}{12}$	Shown		A1 dep on M2 for a correct answer from fully correct working or shows that RHS = $\frac{77}{12}$ and fully correct working shows LHS = $\frac{77}{12}$
				Total 3 marks

Qn	Working	Answer	Mark	Notes
14	Elimination eg $9x - 15y = 75$ $20x + 15y = 70 +$ $(29x = 145)$ or $12x - 20y = 100$ $12x + 9y = 42 -$ $(-29y = 58)$	Substitution eg $4\left(\frac{25+5y}{3}\right) + 3y = 14$ or $4x + 3\left(\frac{25-3x}{-5}\right) = 14$ or $3\left(\frac{14-3y}{4}\right) - 5y = 25$ or $3x - 5\left(\frac{14-4x}{3}\right) = 25$		4 M1 for a correct method to eliminate x or y : coefficients of x or y the same and correct operation to eliminate selected variable (condone 1 arithmetical error) or for correctly writing x or y in terms of the other variable and correctly substituting
				A1 dep on M1 for $x = 5$ or $y = -2$
	eg $3x - 5 \times "-2" = 25$ or $4x + 3 \times "-2" = 14$ or $3 \times "5" - 5y = 25$ or $4 \times "5" + 3y = 14$			M1 dep on M1 for substitution of found variable or repeating the steps in first M1 for the second variable
		$x = 5$ $y = -2$		A1 cao, dep on M1 a correct answer without working scores no marks
				Total 4 marks

Qn	Working	Answer	Mark	Notes
5 (a)			2	M1 for $(x \pm 9)(x \pm 1)$ or for $(x + a)(x + b)$ with $ab = -9$ or $a + b = 8$
		$(x + 9)(x - 1)$		A1 for correct factors
(b)		-9, 1	1	B1 ft dep on factorising in the form $(x + p)(x + q)$
				Total 3 marks

Qn	Working	Answer	Mark	Notes
6 (b)		1	1	B1
				Total 1 mark

Qn	Working	Answer	Mark	Notes
10	$3 \div 2 (=1.5 \text{ or } \frac{3}{2})$ or eg $\frac{5 - -1}{4(-0)}$ or $c = -1$		3	M1 for correct method to find gradient or the correct value of c for gradient, may see a correct calculation or $\frac{3}{2}$ oe or $1.5x (+ c)$ oe for value of c , allow $c = -1, y = -1, (L =) mx - 1$ oe
	$y = "1.5"x (+ c)$ or $y = mx - 1$ or eg $y - 5 = m(x - 4)$			M1 for use of $y = mx + c$ with either m or c correct (NB: $m \neq 0$) or for $(L =) 1.5x - 1$ oe
		$y = \frac{3}{2}x - 1$		A1 oe eg $y = 1.5x - 1$
				Total 3 marks

Qn	Working	Answer	Mark	Notes
16 (a)	$(3x-1)(x+2) = 3x^2 + 6x - x - 2 (= 3x^2 + 5x - 2)$ or $(3x-1)(3x+1) = 9x^2 + 3x - 3x - 1 (= 9x^2 - 1)$ or $(x+2)(3x+1) = 3x^2 + x + 6x + 2 (= 3x^2 + 7x + 2)$		3	M1 for a correct intention to multiply all 3 factors by multiplying 2 factors only, allow one error
	$[(3x^2 + 5x - 2)(3x+1) =] 9x^3 + 15x^2 - 6x + 3x^2 + 5x - 2$ or $[(9x^2 - 1)(x+2) =] 9x^3 + 18x^2 - x - 2$ or $[(3x^2 + 7x + 2)(3x-1) =] 9x^3 + 21x^2 + 6x - 3x^2 - 7x - 2$			M1 (dep)ft for expanding by the third factor, allow one error
		$9x^3 + 18x^2 - x - 2$		A1
	ALTERNATIVE			
	$9x^3 + 3x^2 + 18x^2 + 6x - 3x^2 - x - 6x - 2$		3	M2 for a complete expansion with 8 terms present, at least 4 of which must be correct
		$9x^3 + 18x^2 - x - 2$		A1
				Total 3 marks

Qn	Working	Answer	Mark	Notes
6 (d)		$5cd^2(2c^2 + 3d^2)$	2	B2 for $5cd^2(2c^2 + 3d^2)$ B1 for a correct partial factorisation eg $5(2c^3d^2 + 3cd^4)$ or $cd^2(10c^2 + 15d^2)$ or $5d^2(2c^3 + 3cd^2)$ or $5c(2c^2d^2 + 3d^4)$ $5cd(2c^2d + 3d^3)$ etc or $5cd^2$ (a 2 term expression with just one error)
				Total 2 marks

Qn	Working	Answer	Mark	Notes
6 (c)		$\frac{y^2}{2x}$	2	B2 for $\frac{y^2}{2x}$ oe eg $\frac{0.5y^2}{x}$, $0.5y^2x^{-1}$, $\frac{y^2x^{-1}}{2}$, $\frac{1}{2xy^{-2}}$ oe If not B2, award B1 for 2 of number, x, y correct eg $\frac{ky^2}{x}$ where $k \neq \frac{1}{2}$ or $\frac{y^2}{2x^m}$ where $m \neq 1$ or $0.5y^2$ or $\frac{y^p}{2x}$ where $p \neq 2$) oe [one term can be missing with 2 correct for B1]
				Total 2 marks

Qn	Working	Answer	Mark	Notes
11 (a)	<i>If a graph is ascending you can ft for the marks in parts (b), (c) and (d) – method should be shown by way of marks on the axes for all but the median in part (b)</i>	Correct cf graph	2	B2 (use overlay) Fully correct cf graph – points at ends of intervals and joined with curve or line segments. B1 for for 6 or 7 points plotted correctly at ends of intervals not joined OR for 6 or 7 points from table plotted consistently within each interval (eg at lower bound of interval or midpoint of interval) at their correct heights and joined with smooth curve or line segments. ignore the curve < age 20
(b)		26 – 28	1	B1ft If out of range ft their graph
(c)	e.g. readings at 15 and 45 from the vertical axis eg LQ = 19 – 21 eg UQ = 45 - 47 (the reading at 45 is 45/46 so be careful with the award of this mark)		2	M1ft For use of 15 and 45, or 15.25 and 45.75 (eg reading of 21 and 46 stated or indicated by marks on horizontal axis that correspond to 15 (or 15.25) and 45 (or 45.75) on the vertical axis or correct readings ft their cf graph provided method to show readings is shown)
		24 - 28		A1ft Any value in range (if out of range ft their cf graph reading across at 15 and 45 oe but method must be shown)
(d)	eg reading of 49 or 50 from cf axis		2	M1ft For correct reading at 55 eg 50 (ft from incorrect graph if method shown (lines up and across))
	must be a whole number	10 or 11		A1ft If out of range ft their cf curve if method shown
				Total 7 marks

Qn	Working	Answer	Mark	Notes
16		C, F, D, H	3	B3 for all 4 correct (B2 for 2 or 3 correct) (B1 for 1 correct)
				Total 3 marks

Qn	Working	Answer	Mark	Notes
17	eg $x = 0.34545\dots$ and $100x = 34.545\dots$ with intention to subtract OR $10x = 3.4545\dots$ and $1000x = 345.45\dots$ with intention to subtract Must include algebra as the question asked for ‘using algebra’		2	M1 for 2 recurring decimals (they must identify or show the pair they are using) that when subtracted give a whole number or terminating decimal eg $100x = 34.545\dots$ and $x = 0.34545\dots$ OR $1000x = 345.45\dots$ and $10x = 3.4545\dots$ with intention to subtract. (If recurring dots not shown then showing at least the digits 34545, i.e. 5sf for one of the numbers that they are using) OR $0.3 + 0.0454545\dots$ and Eg $10x = 0.454545\dots$ and $1000x = 45.4545\dots$
	eg $100x - x = 34.545\dots - 0.34545\dots$ and $99x = 34.2$ and $\frac{34.2}{99} = \frac{19}{55}$ oe OR $1000x - 10x = 345.45\dots - 3.4545\dots$ and $990x = 342$ and $\frac{342}{990} = \frac{19}{55}$ oe OR $0.3 + \dots$ and $(1000x - 100x = 990x = 45)$ and $0.3 + \frac{45}{990} = \frac{3 \times 99 + 45}{990} = \frac{19}{55}$ oe	shown		A1 for completion to $\frac{19}{55}$
				Total 2 marks

Qn	Working	Answer	Mark	Notes
1 (a)	enlargement, enlarge, enlarged	Enlargement	3	B1 for enlargement with no mention of translate, reflect, rotate, move, flip
	scale factor 3, SF 3, $\times 3$, factor of 3, 'three' times	Scale factor 3		B1 for (scale factor $=$) 3 with no mention of a vector, line of symmetry or angle
	allow (3, 0) 3, 0	Centre (3, 0)		B1 for (centre $=$) (3, 0)
(b)		Triangle drawn at (1, 4) (1, 6) (2, 4)	1	B1 condone missing label
				Total 4 marks

Qn	Working	Answer	Mark	Notes
9	$-4x \leq 11 - 3$ or $-4x \leq 8$ or $-x \leq 2$ or $3 - 11 \leq 4x$ or $-8 \leq 4x$		2	M1 allow equals sign or condone incorrect inequality sign for M1 only
		$x \geq -2$		A1 allow $-2 \leq x$ SCB1 for x and -2 with an incorrect sign between them or -2 as an answer
				Total 2 marks

Qn	Working	Answer	Mark	Notes
18	eg $(BV^2 =) 3^2 + 6^2 (= 45)$ or $(CT^2 =) 3^2 + 6^2 (= 45)$ or $(DH^2 =) 6^2 + 6^2 (= 72)$ or $(MV^2 =) 3^2 + 3^2 (= 18)$		4	M1 a correct expression for eg BV^2 or CT^2 or DH^2 or MV^2 where M is the midpoint of DC or a correct expression for $[\text{length}]^2$ for any length in the cube using Pythagoras
	eg $(BV =) \sqrt{3^2 + 6^2} (= \sqrt{45} \text{ or } 3\sqrt{5} \text{ or } 6.70\dots)$ or $(CT =) \sqrt{3^2 + 6^2} (= \sqrt{45} \text{ or } 3\sqrt{5} \text{ or } 6.70\dots)$ or $(DH =) \sqrt{6^2 + 6^2} (= \sqrt{72} \text{ or } 6\sqrt{2} \text{ or } 8.48\dots)$ or $(MV =) \sqrt{3^2 + 3^2} (= \sqrt{18} \text{ or } 3\sqrt{2} \text{ or } 4.24\dots)$			M1 for a complete method for eg BV or CT or DH or MV or any length in the cube using Pythagoras
	$(VT =) \sqrt{45 + 3^2}$ or $\sqrt{\left(\frac{\sqrt{72}}{2}\right)^2 + 6^2}$ or $\sqrt{18 + 6^2}$ or $3\sqrt{6}$ or $7.34\dots$			M1 for a correct expression for VT (condone missing brackets around $3\sqrt{5}$ or $3\sqrt{2}$ or $\frac{\sqrt{72}}{2}$)
		$\sqrt{54}$		A1 if $\sqrt{54}$ seen and answer then given as $3\sqrt{6}$ isw and award full marks
				Total 4 marks

Qn	Working	Answer	Mark	Notes
16 (b)	$\left(\frac{8xy^2}{2x^5}\right)^2$ or $\left(\frac{x^4}{4y^2}\right)^{-2}$ or $\left(\frac{4x^{10}}{64x^2y^4}\right)^{-1}$		3	M1 for one of reciprocating or simplifying or squaring
	$\left(\frac{4y^2}{x^4}\right)^2$ or $\left(\frac{x^8}{16y^4}\right)^{-1}$ or $\frac{64x^2y^4}{4x^{10}}$ or $\frac{\frac{1}{4}x^{-10}}{\frac{1}{64}x^{-2}y^{-4}}$			M1 for two of reciprocating or simplifying or squaring
		$\frac{16y^4}{x^8}$		A1 accept $16y^4x^{-8}$ or $\frac{16}{y^{-4}x^8}$ or $\frac{16x^{-8}}{y^{-4}}$ oe
	ALTERNATIVE			
			3	M2 for 2 correct terms (M1 for 1 correct term)
		$\frac{16y^4}{x^8}$		A1 accept $16y^4x^{-8}$ or $\frac{16}{y^{-4}x^8}$ or $\frac{16x^{-8}}{y^{-4}}$ oe
				Total 3 marks

Qn	Working	Answer	Mark	Notes
23 (a)	$2(x^2 - 6x) + 3$ or $2(x^2 - 6x + \frac{3}{2})$		3	M1 or for one of a , b or c correct OR expanding $a(x^2 + 2bx + b^2) + c$
	$2\left[(x-3)^2 - 9\right] + 3$ or $2\left[(x-3)^2 - 3^2 + \frac{3}{2}\right]$ oe			M1 or for two of a , b or c correct OR $-12 = 2ab$ or $3 = ab^2 + c$
		$2(x-3)^2 - 15$		A1 accept $a = 2$, $b = -3$, $c = -15$
				Total 3 marks

Qn	Working	Answer	Mark	Notes
19	eg $(fg(x)) = (2x+1)^2 - 4$		4	M1 for finding $fg(x)$
	eg $4x^2 + 4x - 3 (> 0)$ or $4x^2 + 4x - 3 (= 0)$ or $(2x+1)^2 > 4$ or $(2x+1)^2 = 4$			M1 For a correct expansion and $fg(x)$ written as a 3 term quadratic or a start to write quadratic in correct form for completing square
	$-\frac{3}{2}$ oe (and) $\frac{1}{2}$ oe			A1 for finding the two correct critical values (dep on previous M1) (values seen with any signs between)
		$x < -\frac{3}{2}, x > \frac{1}{2}$		A1 two fully correct inequalities, oe (dep on 2nd M1)
				Total 4 marks

Qn	Working	Answer	Mark	Notes	
21	$(3+2y)^2 - y^2 + 2(3+2y) = 10$	$x^2 - \left(\frac{x-3}{2}\right)^2 + 2x = 10$		5	M1 for using correct substitution of a linear equation into the quadratic – all terms shown correctly
	eg $3y^2 + 16y + 5 (= 0)$	eg $3x^2 + 14x - 49 (= 0)$ $3x^2 + 14x = 49$			A1 for a correct 3 term quadratic
	eg $(3y+1)(y+5) (= 0)$ or $\frac{-16 \pm \sqrt{16^2 - 4 \times 3 \times 5}}{2 \times 3}$ or $3 \left[\left(y + \frac{8}{3}\right)^2 - \left(\frac{8}{3}\right)^2 \right] + 5 = 0$ (should give $(y =) -\frac{1}{3}, -5$)	eg $(3x-7)(x+7) (= 0)$ or $\frac{-14 \pm \sqrt{14^2 - 4 \times 3 \times (-49)}}{2 \times 3}$ or $3 \left[\left(x + \frac{7}{3}\right)^2 - \left(\frac{7}{3}\right)^2 \right] - 49 = 0$ (should give $(x =) \frac{7}{3}, -7$)			M1 dep on M1 method to solve their 3 term quadratic using any correct method (allow one sign error and some simplification – allow as far as eg $\frac{-16 \pm \sqrt{256 - 60}}{6}$ or $\frac{-14 \pm \sqrt{196 + 588}}{6}$ or if factorising allow brackets which expanded give 2 out of 3 terms correct) or correct values for x or correct values for y
	eg $x = 3 + 2 \times -5$ and $x = 3 + 2 \times -\frac{1}{3}$	eg $\frac{7}{3} - 2 \times y = 3$ $-7 - 2 \times y = 3$			M1ft dep on previous M1 for substituting their 2 found values of x or y in a suitable equation (use 2dp or better for substitution) or fully correct values for the other variable (correct labels for x / y)
		$x = \frac{7}{3}, y = -\frac{1}{3}$ $x = -7, y = -5$			A1 dep on M1 (allow coordinates) must be paired correctly allow $x = -7, y = -5$ $x = 2.33(3...), y = -0.33(3...)$
					Total 5 marks

Qn	Working	Answer	Mark	Notes
23	eg $\frac{20}{x^2-36} - \frac{2(x+6)}{x^2-36}$ oe or $\frac{20}{(x-6)(x+6)} - \frac{2(x+6)}{(x-6)(x+6)}$ oe or $\frac{20(x-6)}{(x^2-36)(x-6)} - \frac{2(x+6)(x-6)}{(x^2-36)(x-6)}$ or $\frac{20-2(x+6)}{(x^2-36)(4-x)}$ oe		3	M1 for writing the first two fractions with a common denominator (may be a single denominator) or multiplying both fractions by $\frac{1}{4-x}$ and writing over a common denominator
	eg $\frac{8-2x}{x^2-36} \times \frac{1}{4-x}$ or $\frac{8-2x}{(x-6)(x+6)} \times \frac{1}{4-x}$ or $\frac{20x-2x^2-48}{(x^2-36)(x-6)} \times \frac{1}{4-x}$ oe $\frac{8-2x}{(x^2-36)(4-x)}$ oe			M1 for simplifying first 2 fractions to a single fraction and expanding and simplifying numerator – must be correct, and showing intention to multiply by $\frac{1}{4-x}$ or expanding the numerator of the full solution and writing as a single fraction
		$\frac{2}{x^2-36}$		A1 oe eg $\frac{2}{(x-6)(x+6)}$
				Total 3 marks

Qn	Working	Answer	Mark	Notes
7	$(4^n =)(2^2)^n$ or $(4^n =)2^{2n}$ oe eg $2^k \div 2^{2n} = 2^x$ or $2^k = 4^{\frac{1}{2}k}$ and $2^x = 4^{\frac{1}{2}x}$ oe eg $\frac{4^{\frac{1}{2}k}}{4^n} = 4^{\frac{1}{2}x}$		2	M1 for writing 4^n as $(2^2)^n$ or 2^{2n} or for writing each term in terms of 4 ie $2^k = 4^{\frac{1}{2}k}$ and $2^x = 4^{\frac{1}{2}x}$ If these things are seen in working, award this mark even if followed by incorrect working – if not a choice of methods
		$k - 2n$		A1 allow 2^{k-2n}
				Total 2 marks

Qn	Working	Answer	Mark	Notes
22 (a)(i)		$(-3, -1)$	1	B1
(ii)		$(-6, 2)$	1	B1
(b)		$(p + c, -q)$	2	B2 for $(p + c, -q)$ (B1 for $p + c$ or $-q$ in the correct place)
				Total 4 marks

Qn	Working	Answer	Mark	Notes
21	$(\sqrt{2}-1)^2 = 2 - \sqrt{2} - \sqrt{2} + 1 (= 3 - 2\sqrt{2})$	$\frac{(3+\sqrt{8})}{(\sqrt{2}-1)^2} \times \frac{(\sqrt{2}+1)^2}{(\sqrt{2}+1)^2}$		4 M1 expand the denominator (accept $2 - 2\sqrt{2} + 1$ - must see expansion) OR method to rationalise using $(\sqrt{2}+1)^2$
	$\frac{(3+\sqrt{8})}{(3-2\sqrt{2})} \times \frac{(3+2\sqrt{2})}{(3+2\sqrt{2})}$	$(\sqrt{2}-1)^2 = 2 - \sqrt{2} - \sqrt{2} + 1 (= 3 - 2\sqrt{2})$ or $(\sqrt{2}+1)^2 = 2 + \sqrt{2} + \sqrt{2} + 1 (= 3 + 2\sqrt{2})$ or $(\sqrt{2}-1)(\sqrt{2}+1) = 2 - \sqrt{2} + \sqrt{2} - 1 (= 1)$		M1 oe ft $3 - 2\sqrt{2}$ method to rationalise OR expansion of $(\sqrt{2}-1)^2$ (accept $2 - 2\sqrt{2} + 1$) or $(\sqrt{2}+1)^2$ (accept $2 + 2\sqrt{2} + 1$) or $(\sqrt{2}-1)(\sqrt{2}+1)$
	eg $\frac{9+6\sqrt{2}+3\sqrt{8}+8}{9-6\sqrt{2}+6\sqrt{2}-8}$ or $\frac{9+12\sqrt{2}+8}{9-8}$ or $\frac{9+6\sqrt{2}+3\sqrt{8}+8}{1}$ or $\frac{9+12\sqrt{2}+8}{1}$			M1 dep on 2nd M1 correct expansion of brackets
			$17 + \sqrt{288}$	A1 or $p=17, q=288$ answer from fully correct working with intermediate steps of working seen
				Total 4 marks

Qn	Working	Answer	Mark	Notes
14	eg $\left(\frac{1}{2}\right)^4 \left(= \frac{1}{16} \text{ or } 0.0625 \right)$ or $4\left(\frac{1}{2}\right)^4 \left(= \frac{4}{16} \text{ or } \frac{1}{4} \text{ or } 0.25 \right)$ or $6\left(\frac{1}{2}\right)^4 \left(= \frac{6}{16} \text{ or } \frac{3}{8} \text{ or } 0.375 \right)$ oe		3	M1 for finding the probability of one correct combination eg calculation for <i>oooo</i> or <i>eeee</i> or $4 \times eooo$ or $4 \times eeee$ or $6 \times eooo$
	eg $1 - \left(\frac{1}{2}\right)^4$ or $4\left(\frac{1}{2}\right)^4 + 6\left(\frac{1}{2}\right)^4 + 4\left(\frac{1}{2}\right)^4 + \left(\frac{1}{2}\right)^4$ or (<i>e</i> + <i>oe</i> + <i>ooe</i> + <i>ooooe</i>) $\frac{1}{2} + \frac{1}{2} \times \frac{1}{2} + \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} + \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2}$ $\left(= \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} \right)$ oe			M1 for a complete method
		$\frac{15}{16}$		A1 oe eg 0.9375 (allow 0.937 or 0.938)
				Total 3 marks

Qn		Max score	Mean %	Average score of candidates achieving grade:								
				ALL	9	8	7	6	5	4	3	U
1	Probability	4	86	3.43	3.86	3.74	3.63	3.39	3.14	2.40	1.29	0.00
2	Algebraic manipulation	2	91	1.81	1.96	1.94	1.89	1.83	1.70	1.40	0.91	0.37
3	Fractions	3	88	2.63	2.92	2.86	2.81	2.63	2.42	1.76	0.99	0.33
4	Simultaneous linear equations	4	79	3.14	3.94	3.79	3.47	2.94	2.05	0.93	0.26	0.03
5	Quadratic equations	3	79	2.36	2.95	2.85	2.59	2.15	1.61	0.73	0.27	0.10
6	Use of symbols	1	80	0.80	0.98	0.93	0.85	0.72	0.56	0.43	0.29	0.16
7	Graphs	3	73	2.20	2.96	2.85	2.48	1.84	0.95	0.32	0.15	0.02
8	Algebraic manipulation	3	77	2.30	2.91	2.75	2.45	2.10	1.55	0.83	0.32	0.01
9	Algebraic manipulation	2	74	1.48	1.95	1.83	1.56	1.24	0.89	0.46	0.16	0.05
10	Use of symbols	2	74	1.47	1.93	1.76	1.52	1.22	0.93	0.61	0.24	0.08
11	Graphical representation of data	7	66	4.59	6.46	5.65	4.62	3.30	2.36	1.69	1.02	0.00
12	Graphs	3	62	1.87	2.71	2.23	1.70	1.32	1.06	0.80	0.55	0.40
13	Decimals	2	56	1.11	1.70	1.45	1.11	0.72	0.37	0.11	0.04	0.00
14	Transformation geometry	4	63	2.53	3.51	2.91	2.50	2.04	1.65	1.06	0.52	0.00
15	Inequalities	2	63	1.25	1.74	1.45	1.04	0.79	0.50	0.24	0.07	0.00
16	3D shapes and volume	4	54	2.16	3.71	2.90	1.99	1.05	0.44	0.14	0.05	0.00
17	Expressions and formulae	3	52	1.57	2.60	1.95	1.37	0.93	0.59	0.31	0.15	0.02
18	Quadratic equations	3	53	1.59	2.84	2.17	1.26	0.69	0.36	0.19	0.13	0.04
19	Function notation	4	47	1.87	3.35	2.52	1.62	0.75	0.30	0.10	0.01	0.00
20	Quadratic equations	5	49	2.45	4.52	3.47	1.87	0.87	0.33	0.11	0.02	0.00
21	Algebraic manipulation	3	40	1.20	2.42	1.46	0.81	0.43	0.21	0.09	0.04	0.01
22	Powers and roots	2	43	0.85	1.79	1.12	0.51	0.19	0.05	0.03	0.00	0.00
23	Graphs	4	35	1.39	2.95	1.64	0.90	0.40	0.17	0.06	0.04	0.00
24	Powers and roots	4	34	1.35	2.83	1.64	0.87	0.46	0.18	0.06	0.03	0.00
25	Probability	3	29	0.86	2.01	0.87	0.46	0.20	0.11	0.03	0.02	0.01
		80	60	48.26	71.50	58.73	45.88	34.20	24.48	14.89	7.57	1.63

Suggested grade boundaries

Grade	9	8	7	6	5	4	3
Mark	65	52	40	29	20	11	5