

Mark Scheme (Results) November 2007

IGCSE

IGCSE Mathematics (4400_4H)

4400 IGCSE Mathematics
November 2007
Paper 4H

Q		Working	Answer	Mark	Notes
1.		$\frac{1.6}{2.5}$		2	M1 for 1.6 or 2.5 seen or for 2.430...
			0.64	A1	Accept $\frac{16}{25}$
					Total 2 marks

2.	(a)		$5(x - 4)$	1	B1	cao
	(b)		$y(y + 6)$	2	B2	B1 for factors, which, when expanded and simplified, give two terms, one of which is correct except $(y + 6)(y - 6)$ and similar SC B1 for $y(y + 6y)$
						Total 3 marks


3.		$630 \times 1.45 \div 2.61$		2	M1	for $\frac{630}{2.61}$ or 241.38 or better or 241.37 or 630×1.45 or 913.5 or 0.55... seen or 1.8 seen
			350	A1	Accept 349.99 or 350	
					Total 2 marks	

4.		Reflection in $x = 4$	2	B1	for reflection, reflect
				B1	for $x = 4$ stated or eg 'in dotted line'
					Total 2 marks

5.		$72 \div 6$ or 12 seen		2	M1	
			84		A1	cao
						Total 2 marks

6.	(a)(i)		57	2	B1	cao
	(ii)	alternate angles			B1	
	(b)	corresponding angles and sum of angles on a straight line is 180° or allied or co-interior angles and (vertically) opposite angles or alternate angles and sum of angles on a straight line is 180°		2	B1	for one pair
			71		B1	cao
						Total 4 marks

7.	(a)	$\frac{55}{150} \times 60$		3	B1	for $\frac{55}{150}$ oe or $\frac{60}{150}$ oe seen
					M1	for $\frac{55}{150} \times 60$
			22		A1	cao
	(b)	$68 \times 48 + 58 \times 35$ $= 3264 + 2030$		3	M1	2 products $m \times f$ where m is within each interval and consistent (inc end points)
					M1	(dep) for use of halfway values
			5294		A1	Accept 5300 or 5290 if M1 + M1 scored
	(c)	eg no upper limit for extra large, no lower limit for small, don't know midpoints for XL, S		1	B1	
						Total 7 marks

8.	(a)			2	B2	B1 for either open circle at -2 or solid circle at 3
	(b)		-1 0 1 2 3	2	B2	B1 for all correct + 1 wrong or for four correct and none wrong
						Total 4 marks

9.		arc centre B cutting AB and AC at (say) P and Q		2	B1	
		arcs centre P and Q of equal radii which intersect at R (say) and BR joined			B1	(dep) bisector within tolerance
						Total 2 marks

10.	(a)	7 2 (-1) -2 -1 2 7	2	B2	B1 for 4 correct	
	(b)		graph	2	B2	B1 for 5 points plotted correctly $\pm \frac{1}{2}$ sq ft from (a) if at least B1 scored B1 for correct curve or, if there are 1 or 2 errors in (a) and no plotting errors, award for a curve passing through the 7 points from their table.
						Total 4 marks

11.		$420 \times \frac{100}{56}$		3	M1	for $420 \div 56$ or 7.5 seen
					M1	(dep) for $\times 100$
			750		A1	cao
						Total 3 marks

12.		$4.9^2 + 16.8^2$ or $24.01 + 282.24$ or 306.25		3	M1	for squaring and adding
		$\sqrt{4.9^2 + 16.8^2}$			M1	(dep) for square root
			17.5		A1	cao
						Total 3 marks

13.		$\frac{20805}{1.14}$ or $20805 \times \frac{100}{114}$		3	M2	for $\frac{20805}{1.14}$ or $20805 \times \frac{100}{114}$ M1 for $\frac{20805}{114}$, 114% = 20805 or 182.5 seen
			18 250		A1	cao
						Total 4 marks

14.	(a)		$6n^2$	1	B1	cao
	(b)		$3x^3y^2$	2	B2	B1 for x^3 or y^2
	(c)		t^{12}	1	B1	cao
	(d)		$\frac{p^6}{8}$	2	B2	B1 for $\frac{1}{8}$ oe or for p^6
						Total 6 marks

15.	(a)	$6.8 \times \frac{15}{10}$		2	M1	
			10.2		A1	cao
	(b)	$12.3 \times \frac{10}{15}$		2	M1	
			8.2		A1	cao
	(c)	$\frac{15}{10}$ or 1.5 oe		2	M1	<p>for $\frac{15}{10}$ or 1.5 oe</p> <p>or for $\left(\frac{10}{15}\right)^2$ or $\frac{4}{9}$ or 0.4 oe</p> <p>or for correct expression which, if accurately evaluated, gives the correct answer</p> <p>or for the area of one of the triangles evaluated correctly</p> <p>Area $\triangle ABC$ rounds to 62.3 (62.2700...) NOT 62.73</p> <p>Area $\triangle CDE$ rounds to 27.7 (27.6755...) NOT 27.88</p> <p>Note: the angles of the triangle are 42.5°, 54.5° and 83.1°.</p>
			2.25 oe		A1	<p>for 2.25 or $2\frac{1}{4}$ or $\frac{9}{4}$</p> <p>or for answer rounding to 2.25</p> <p>Even if M1 awarded, do not award A1 for a correct answer, if there are any errors in the working.</p>
						Total 6 marks

16.	(a)(i)		15	2	B1	cao
	(ii)		7 or 8		B1	
	(b)	26 or $26\frac{1}{2}$		2	M1	may be stated or indicated on graph
			54 - 55 inc		A1	
						Total 4 marks

17.	(a)	$72 = 2^3 \times 3^2$ and $90 = 2 \times 3^2 \times 5$ or 2×3^2 or 1,2,3,4,6,8,9,12,18, 24, 36,72 and 1,2,3,5,6,9,10,15,18,30,45,90		2	M1	Need not be products of powers; accept products or lists ie 2,2,2,3,3 and 2,3,3,5 Prime factors may be shown as factor trees
			18		A1	cao
	(b)	$2^3 \times 3^2 \times 5$ or 72, 144, 216, 288, 360 and 90, 180, 270, 360		2	M1	
			360		A1	cao
						Total 4 marks

18.	(a)	$2y = 6 - x$		3	M1	for $2y = 6 - x$ or for stating coordinates of 2 points on line
		$y = 3 - \frac{x}{2}$ or $y = \frac{6 - x}{2}$			M1	for correct rearrangement of equation with y as subject or for attempt to find gradient of line joining two stated points
			$-\frac{1}{2}$		A1	for $-\frac{1}{2}$ oe dep only on first M1 SC if M0, award B1 for correct ft from incorrect rearrangement
	(b)		$y = -\frac{1}{2}x + 5$ oe	1	B1	correct answer or ft from (a) Equivalent equations include $x + 2y = 10$
						Total 4 marks

19.	(i)		8	4	B1	cao
	(ii)		12		B1	cao
	(iii)		0		B1	cao
	(iv)		16		B1	cao
						Total 4 marks

20.	(a)	$\frac{dy}{dx} = 3x^2 - 10x + 8$		4	B2	B1 for 2 correct terms
		$3 \times 2^2 - 10 \times 2 + 8$			M1	(dep on at least B1) for substituting $x = 2$
			0		A1	cao
	(b)	(could be) turning point, max or min, (is) stationary point tangent is parallel to the x -axis		1	B1	
						Total 5 marks

21.	(a)	bar height 21 little squares		2	B1	Allow $\pm \frac{1}{2}$ sq
		bar height 6 little squares			B1	Allow $\pm \frac{1}{2}$ sq
	(b)		8	1	B1	cao
						Total 3 marks

22.	(a)(i)		38	2	B1	cao
	(ii)	Angles in the same segment oe			B1	Award if 'same segment', 'same arc' or 'same chord' stated or implied
	(b)		52	2	B2	B1 for $\angle ADC = 90^\circ$ or $\angle COD = 76^\circ$ stated or indicated on diagram
						Total 4 marks

23.	(a)	$3(2x - 5) + 2$ or $6x - 15 + 2$		2	M1	
			$6x - 13$		A1	
	(b)	eg $\times 3 \rightarrow +2$ or attempt to make $\div 3 \leftarrow -2$ x the subject of $y = 3x + 2$ or $x = 3y + 2$			M1	
			$\frac{x-2}{3}$ oe		A1	
						Total 4 marks

24.		$\frac{3}{5} \times \frac{3}{4} + \frac{2}{5} \times \frac{2}{4}$		3	M2	for sum of both products (M1 if one correct product seen)
			$\frac{13}{20}$		A1	
						Total 3 marks

25.	(a)	$3x + x(4 - x) = 11$ or $4x + x(3 - x) = 11$ or $(4 - x)(3 - x) = 1$ or $12 - (4 - x)(3 - x) = 11$		2	M1		Award M1 A1 for $4x + 3x - x^2 = 11$
		$3x + 4x - x^2 = 11$ or $4x + 3x - x^2 = 11$ or $12 - 4x - 3x + x^2 = 1$ or $12 - 12 + 4x + 3x - x^2 = 11$			A1		
	(b)	$\frac{7 \pm \sqrt{(-7)^2 - 4 \times 11}}{2}$		3	M1	for correct substitution Condone omission of brackets	
		$\frac{7 \pm \sqrt{5}}{2}$			M1	for correct simplification	
			4.62, 2.38		A1	for 3 sf or better (4.61803... , 2.38196...)	
	(c)(i)		2.38	2	B1	for 2.38 or better	
	(ii)		eg $x < 3$		B1		
							Total 7 marks

26.	(a)	$\frac{1}{3}\pi r^2 \times r + \pi r^2 \times r$ or $\frac{1}{3}\pi r^3 + \pi r^3$		2	M1	
			$\frac{4}{3}\pi r^3$		A1	dep on M1
	(b)	$\pi l + 2\pi r^2 + \pi r^2$ oe		3	M1	
		$l > r$ or $l = r\sqrt{2}$ oe			M1	
			$> 4\pi r^2$		A1	
						Total 5 marks