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Mark Scheme (Results)
Summer 2010

GCE O Level

GCE O Level Mathematics B (7361/02)

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Mathematics B, Mark Scheme

7361 June 2010 Paper 2

1.	(a)	£ 0.72	B1	**1**
	(b)	2.34/c's(0.72) **OR** $\frac{15 \times 2.34}{10.80}$	M1	
		3.25 kg	A1	**2**
			Total 3 marks	

2.		$6 + 15x - 2x - 5x^2$ (condone one sign error)	M1	
		attempt to differentiate c's quadratic	M1 dep	
		$13 - 10x$ (o.e. i.e. 15 – 2 – $10x$)	A1	
		33	A1 ft	**4**
			Total 4 marks	

3.	(a)	¾ x 4/5 x 5/8, 3/8 (o.e.)	M1, A1	**2**
	(b)	¾ x 1/5 x 5/8 + ¾ x 4/5 x 3/8 + ¼ x 4/5 x 5/8 (at least two correct terms added together)	M1	
		+ c's(3/8)	M1 dep	
		131/160 (o.e.)	A1	**3**
		Alternative method (Complement)		
		At least 2 of the following triplets:		
		$\frac{1}{4}x\frac{1}{5}x\frac{3}{8}$, $\frac{1}{4}x\frac{1}{5}x\frac{5}{8}$, $\frac{1}{4}x\frac{4}{5}x\frac{3}{8}$, $\frac{3}{4}x\frac{1}{5}x\frac{3}{8}$	M1	
		1 – 4 correct probability triplets	M1 dep	
		131/160 (o.e)	A1	
			Total 5 marks	

4.	(a)	3/11 x 8.25, £ 2.25	M1, A1	**2**
	(b)	(Cost of labour =) £6.00 (cao)	B1 ft	
		$\frac{1}{3} \times 2.25$ ($= 0.75$)	M1	
		% decrease = c's(0.75)/c's(6) x 100	M1 dep	
		12.5% (cao)	A1	**4**
			Total 6 marks	

5.	(a)	*XD* . 9 = 4 x 6, $2\frac{2}{3}$ (o.e. i.e. 2.67 or 24/9)	M1, A1	**2**
	(b)	12^2 = *PA* . (*PA* + 10) (o.e.)	M1	
		$x^2 + 10x - 144 \ (= 0)$	A1	
		attempt to factorise a trinomial quadratic	M1	
		x = 8 (ignore other solutions)	A1	
		conclusion, in words	A1	**5**
			Total 7 marks	

6.	(a)	(-4 - 1)/(10 - 0) (o.e.), -1/2 (o.e.)	M1, A1	**2**
	(b)	m = c's(a) OR c = 1	M1	
		y = -1/2x + 1 (o.e.)	A1	**2**
	(c)	$y \leq 0$, $y \geq -4$	B1, B1	
		$x \geq 0$,	B1	
		$y \leq$ c's(b)	B1 ft	**4**
			Total 8 marks	

7.	(a)	1.2 seen	B1	
		CD = $\sqrt{(1.6^2 + \text{c's}(1.2)^2)}$ (o.e.), conclusion	M1, A1	**3**
	(b)	four surface areas found using correct formulae	M1	
		completely correct method for total area	M1 dep	
		108.8 cm^2 (accept 109)	A1	**3**
	(c)	area of c's trapezium x 8, 51.2 cm^3	M1, A1	**2**
	(d)	seeing 20	M1	
		length = c's(51.2)/(20 x 0.8)	M1	
		3.2 cm	A1	**3**
				Total 11 marks

8.	(a)	$60/x$	B1	**1**
	(b)	$60/(x + 120)$	B1	**1**
	(c)	9/20 (o.e.)	B1	**1**
	(d)	c's(a) - c's(b)	M1	
		$60/x - 60/(x + 120) = 9/20$ (o.e)	A1	**2**
	(e)	Correctly removing denominators (allow one sign error) (numerators can be unsimplified)	M1	
		$9x^2 + 1080x - 144\,000 (= 0)$ (o.e.)	A1 ft	
		conclusion	A1	**3**
	(f)	attempt to factorise a trinomial quadratic or correct use of formula	M1	
		$(x - 80)(x + 200)$ (= 0)	A1	
		$x = 80$ (ignore -200)	A1	**3**
	(g)	c's (b) with c's (80) substituted 18 secs	M1, A1	**2**
				Total 13 marks

9.	(a)	$\sqrt{(25.2^2 - 22.5^2)}$, 12 cm	M1, A1	**2**
	(b)	cos ∠ ADO = 22.5/25.5 (o.e.), 28.1°	M1, A1	**2**
	(c)	using c's(12) – 5	M1	
		$\sqrt{(c's(12)^2 - c's(7)^2)}$	M1 dep	
		conclusion	A1	**3**
	(d)	$\tan^{-1}$ (9.75/c's(7)) (o.e.)	M1	
		∠ *COB* = 54.3°	A1	**2**
	(e)	$\sin^{-1}$ (c's(7)/25.5) (o.e.), 15.9° (or better)	M1, A1	
		c's(15.9°) + c's(28.1°)	M1 dep	
		44.0°	A1	**4**
			Total 13 marks	

10.	(a)	Δ A	B1	**1**
	(b)	Δ B	B3(-1ee)	**3**
	(c)	Δ C	B2 ft (-1ee)	**2**
	(d)	$y = x$	B1	**1**
	(e)	Δ D	B3 ft (-1ee)	**3**
	(f)	Reflection	M1	
		In x axis or $y = 0$	A1	**2**
	(g)	$\begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$	B2(-1ee)	**2**
			Total 14 marks	

11.	(a) (i)	$2.(3^3) - 5.(3^2) - 4.3 + 3$	M1	
		= 0 + conclusion	M1 dep	
	(ii)	$(x-3)\overline{)2x^3-5x^2-4x+3}$ $2x^2+x$	M1	
		$2x^2+x-1$	A1	
		a valid method for factorising a trinomial quadratic	M1	
		$(2x-1)(x+1)$	A1	**6**
	(b)	-3, -7, -15.5	B1,B1,B1	**3**
		SC: -6, -14, -31 $\Rightarrow$ B1, B0, B0		
	(c)	graph penalties straight line segments each point missed (±½ small square) each missed segment each point not plotted each point incorrectly plotted (±½ small square) tramlines in two or more segments very poor curve (curve should be smooth and not erratic)	B3	**3**
	(d)	$2x^3-8x^2+4=1+4x-3x^2$	M1	
		OR		
		$x^3-\frac{5}{2}x^2-2x+\frac{3}{2}$ (= 0)		
		conclusion	A1	**2**
	(e)	3, 0.5, -1 (cao)		
		2 correct values	B1	
		all 3 correct	B1	**2**
				Total 16 marks

TOTAL 100 MARKS

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