OXFORD CAMBRIDGE AND RSA EXAMINATIONS

OCR FUNCTIONAL SKILLS QUALIFICATION IN MATHEMATICS AT LEVEL 1

9 – 13 JULY 2012

The maximum mark for this paper is [60]

This document consists of 12 printed pages

OCR Level 1 Functional Skills Maths
Mark Scheme Referencing

Our ref	Coverage and Range
N1	Understand and use whole numbers and understand negative numbers in practical contexts
N2	Add, subtract, multiply and divide whole numbers using a range of strategies
N3	Understand and use equivalences between common fractions, decimals and percentages
N4	Add and subtract decimals up to two decimal places
N5	Solve simple problems involving ratio, where one number is a multiple of the other
N6	Use simple formulae expressed in words for one-or-two-step operations
G1	Solve problems requiring calculation, with common measures, including money, time, length, weight, capacity and temperature
G2	Convert units of measure in the same system
G3	Work out areas and perimeters in practical situations
G4	Construct geometric diagrams, models and shapes
S1	Extract and interpret information from tables, diagrams, charts and graphs
S2	Collect and record discrete data and organise and represent information in different ways
S3	Find mean and range
S4	Use data to assess the likelihood of an outcome

Process Skills/Skill Standards
R = Representing
A = Analysing
I = Interpreting

Representing	Our Ref
Understand practical problems in familiar and unfamiliar contexts and situations, some of which are non-routine.	R1
Identify and obtain necessary information to tackle the problem	R2
Select mathematics in an organised way to find solutions	R3
Analysing	
Apply mathematics in an organised way to find solutions to straightforward practical problems for different purposes.	A1
Use appropriate checking procedures at each stage.	A2
Interpreting	
Interpret and communicate solutions to practical problems, drawing simple conclusions and giving explanations.	I1

FS Maths L1 July 2012 Marking Guidance

Task 1 – Ironing

Part	Process	Award		On evidence of	Notes	Skill Standards R A I
a	Open hours	**1**	**1**	8.5 (hours) oe	8 hours 30 minutes etc Condone 8.3(0)	**R2**
b(i)	Cost of 7 shirts	**2**	**2**	£8.47 oe **or**	847p	
			1	8.47 or 847 (no units) or £8.47p or (£)1.21 seen	Penalise money convention of £….p **once** throughout task	**R3** **A1**
(ii)	Minutes ironing	**2**	**2**	Any time from 14 to 28 (minutes) **or**	If units must be minutes	
			1	2 to 4 seen		**R1** **I1**
c	Earnings from ironing duvet-covers	**5**	**1**	Use of any time from 4 to 8 to iron a duvet		
			1	Correct method to find number ironed per hour or 15, 12, 10, 8.5(714…), 8 or 7.5	60 ÷ *their* time oe. 15… implies first mark	
			1	One duvet cost x *their* number ironed	Accept rounded costs throughout	
			1	Correct answer from *their* figures **or** A correct total price for an **identified** duvet type x 15, 12,….)	Check using calculator and award 4 marks if correct.	**R1** **A1** **I1** **R3** **I1**
			1	Correct units including money conventions or Some annotation or Comment about most/average/minimum consistent with their assumptions	Penalise money convention of £….p **once** throughout task	

Part	Process	Award		On evidence of	Notes	Skill Standards R A I
d(i)	Number of bags in a day	5	2	Correct times (or range of times) for one of each of Duvet, sheet, two pillowcases, some shirts, and each "other" **or**	If "bedding" stated then time must be between 9 and 17 minutes and counts as 3 times.	
			1	Correct times for THREE of Duvet, sheet, pillowcase, shirt, other **and**		
			1	Attempt total of *their* times T		
			1	A correct **method** for number of bags in a day using T (answer may be seen in part (ii))	Treat 8 to 8½ hours as a day	R2 A1 I1 A1 I1
			1	Round DOWN number of bags or Well ordered working or Justify less time than 510 or Any sensible comment related to time taken to iron, taking breaks, supply of laundry		
(ii)	Daily earnings	3	1	**Three** correct costs for items on *their* list		
			1	Total of *their* costs for one bag correct (B)		
			1	B x *their* number of bags from **d(i)** correct condone truncated	Allow rounded figures Use spreadsheet	R2 A1 I1
				If **0** scored for second or third marks		
				1 for Attempt total cost of one bag of ironing	Penalise money convention of £….p **once** throughout task	

Part	Process	Award		On evidence of	Notes	Skill Standards R A I
	Checking	2	2	A clear check of a calculation **or**		
			1	Statement that an answer is reasonable, or 3 correct calculations throughout task **or**		**A2** **A2**
			0	Fewer than 3 correct calculations or answers and no checks		
	Total	**20**			**Totals**	**7 7 6**

Possible evidence

(c)

Time	Number in hour $n = (60 / time)$	Single Earnings $n \times 2.50$	Double Earnings $n \times 3.23$	King Earnings $n \times 3.58$	Super-king Earnings $n \times 4.72$	Average Earnings $n \times 3.58$
4	15.0	£37.50	£48.45	£53.70	£70.80	£53.70
5	12.0	£30.00	£38.76	£42.96	£56.64	£42.96
6	10.0	£25.00	£32.30	£35.80	£47.20	£35.80
7	8.6	£21.43	£27.69	£30.69	£40.59	£30.69
8	7.5	£18.75	£24.23	£26.85	£35.40	£26.85

(d)

Items	Individual time Minimum					Total time Minimum	Maximum
Sheet	3	4	5			14	33
Duvet	4	5	6	7	8		
Pillow case x 2	1	2					
Shirts	2	3	4				
Others x 3	1	2	3	4			

Task 2 – Car Emissions

Part	Process	Award		On evidence of	Notes	Skill Standards R A I
a(i)	Identify highest emission car	**1**	1	Porsche or Cayenne oe	**1** for 263 or any other unequivocal indication	**R2**
a(ii)	Range of emissions	**2**	**2**	159 **or**	Ignore wrong or confused units	
			1	263 **and** 104 seen		**R3 A1**
b(i)	Complete tables with car emission values and calculate means	**5**	1	**1200 cc table** 5 from Jazz , Picanta , Clio , Yoti, Smart, Yaris	In both tables, count a wrong inclusion as an error so 4 right and 1 wrong inclusion = 3 right. (-1 for each wrong inclusion)	**R1** **R2 A1 1I1** **R3**
			1	**1200cc to 1800cc table** A4, Fiesta , Golf		
			3	**Means** Both of *their* means correct or 123 to 124 **and** 143 or 167 **or**		
			2	One of *their* means correct or 123 to 124 or 143 or 167 **or**	Check means using their figures in table	
			1	Two correct totals		

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Part	Process	Award		On evidence of	Notes	Skill Standards R A I
b(ii)	Make sensible comparisons between two groups	2		**Award up to 2 marks from…** Identify Amy **and**	Interpret their comments sensitively. Values do not need to be quoted. Follow through from their means and tabulated values. Do not reward same statement twice. Reward any other sensible comment **but not** reiterating given ones.	2I1
			1	**Mean** for smaller cars less than **mean** for larger cars **or** **Bigger** cars produce, on average, **19** or **42** (g/km) **more** or converse.		
			1	**Most** cars in the first table have lower emissions than those in second table.		
			1	**Porsche Cayenne** (much) **larger engine** and (much) **higher emissions.**		
			1	Identify Liam **and** **VW Golf and Skoda Yoti** both have emissions of **149** but are in **different size groups** (tables)		
c	Calculations to show that driving a Ford (Fiesta) will cost less than an Audi (A4) Use function generator for cost of driving 10,000 miles and compare road tax.	8		**Audi**	Condone any truncation Award marks for any other mileage used. (Check)	R1 R3 2A1 3I1
			3	(£)1474(.10) or (£)1319(.10) **and** (£)155 **or**		
			2	(£)1319(.10) **or**		
			1	(£)155 or 39.8		
				Fiesta	Award marks for any other mileage used. (Check)	
			3	(£)1111.(40) or (£)1021.(40) **and (**£)90 **or**		
			2	(£)1021.40 **or**		
			1	(£)90 or 51.4 **and**		
			1	Clear calculations, set out so that processes may be seen		
				Ford is cheaper because… (Award 1 from) Car tax is (£)65 cheaper or	Ft *their* cheapest car	
			1	Fuel saving around *their* (£)298 or Total saving around *their* (£)363 per year.	ft *their* fuel calculations	

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Part	Process	Award	On evidence of		Notes	Skill Standards R A I		
	Checking	2	**2**	A clear check of a calculation **or**				
			1	Statement that an answer is reasonable, or 3 correct calculations throughout task **or**			**2A2**	
			0	Fewer than 3 correct calculations or answers and no checks				
	TOTAL	20			Totals	7	6	7

Expected solution and evidence

(c)

Tables to be completed

Cars with engines below 1200cc	Emission of CO_2 in g/km
Daihatsu Sirion	118
Honda Jazz	125
Kia Picanta	114
Renault Clio	139
Smart Car	104
Skoda Yoti	149
Toyota Yaris	118
Mean	867 ÷ 7 = 123.9

Cars with engines between 1200-1800cc	Emission of CO_2 in g/km
Fiat Punto	132
Audi A4	164
Ford Fiesta	127
VW Golf	149
Mean	572÷4 = 143

Mean with Porsche may be used
=835 ÷ 5 = 167

Task 3 –Gold League

Part	Process	Award		On evidence of	Notes	Skill Standards R	A	I
a(i)	Find the correct number of points for given positions	2	2	16 or 10 and 6 **or**				
			1	5 + 5 or 10 or 3 + 3 or 6 or 3 + 5 or 8 seen		R2	A1	
a(ii)	Find maximum number of points for last 7 races	2	2	42 **or**				
			1	7 or 6 seen		R1	A1	
b	Determine whether statement is true that Ball is 15 points ahead of Oban	4	3	37 AND 21 seen or 16 (difference) **or**	Ball 37 Oban 21 **0** for Ball 39, Oban 29 etc			
			2	37 OR 21 seen or 19 (Ball) AND 28 (Oban) or 9 (difference) **or**	9 is from PLACES 9 and 28 are sums of PLACES			I1
			1	Indication of finding some places or points scored				I1
				And		R1	A1	
			1	"Correct" and quantified comparison with statement (15 points) based on *their* evidence	Eg (Wrong,) it is 16, not 15 or "Ball is further ahead than that" **0** for "Ball is ahead"			
c(i)	Determines if Drake scored any points in races 9 or 10	2	2	Drake is wrong and includes 8 or 12 or 18 or 20, as required **or**	Eg. Drake can't have won both races as he would have.. .. 20 points and he only has 18. .. gained 12 points and this would put him on 20			
			1	Comment that may include 8 or 12 or 18 or 20 but is inconclusive or 8 points (only in the first 8 races) or (gain of) 12 points	Must be 8 **points** and not 8 races	R2		I1
c(ii)	Interprets how Grater may have scored 6 points	3	2	(Grater scores) 8 (points in races) 9 and 10 **or**	Or "last two" (races)			
			1	(Grater scores) 4 (points in the) first 8 races or (Grater scores) 12 – *their* 4 (points in races) 9 and 10	Accept 2 + 2 Or "last two" (races)		A1	I1
				And				I1
			1	Gary AND one example of how Grater may have scored *their* 8 points that does not include first place.	Eg 2nd = 5 AND 4th = 3 Must be clear it is points they are considering NOT places.			

Part	Process	Award		On evidence of	Notes	Skill Standards R A I
(d)	Determine whether Oban can still win the Gold League.	**5**	**3**	(Oban) 47 to 43 points AND he can win or EXTRA points total 14 to 18 AND he can win **or**	He can score 18 points and have more than Cowell	
			2	(Oban) 47 to 43 points or EXTRA points total 14 to 18 OR Attempt (EXTRA) points total for Oban based on 4, 5, 6 or 8, 10, 12 points AND "correct" statement based on *their* total **or**	Eg 29 + 6 + 6 = 41 or 12 + 12 = 24	
			1	Attempt (EXTRA) points total for Oban based on 4, 5 or 6 and 8, 10 and 12 points or an inconclusive statement based on finishing first	He could finish first and win	
				And		R2 A1 I1
			1	State clearly the POSITIONS that Oban must finish in to win the Gold League. (May be implied by points added)		R3 I1
				And	1 and 1 OR 1 and 2 OR 1 and 3 OR 2 and 1 OR 2 and 1 OR 3 and 1	
			1	State correctly ONE condition on Cowell or Ball that will allow Oban to win with *their* points for Oban. (Need not be a maximum case.)	Eg Cowell must not come 1st to 6th (NB Cowell must not win is wrong) or Ball can only come 5th and 6th Condone loose but true statements such as "Cowell must come last".	
	Checking	**2**	**2**	A clear check of a calculation **or**		
			1	Statement that an answer is reasonable, or 3 correct calculations throughout task **or**		A2 A2
			0	Fewer than 3 correct calculations or answers and no checks		
	Total	**20**			**Total**	**6 7 7**

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Results of the first eight 100 metre races

Stadium Position	Shanghai		Oslo		Rome		Lisbon		Doha		Paris		Monaco		Lausanne	
1	Oban	6	Ball	6	Cowell	6	Daley	6	Ball	6	Drake	6	Preece	6	Painter	6
2	Ball	5	Cowell	5	Lemar	5	Simmons	5	Cowell	5	Ball	5	Oban	5	Ball	5
3	Cowell	4	Oban	4	Colt	4	Ball	4	Colt	4	Cowell	4	Cowell	4	Cowell	4
4	Colt	3	Calder	3	Ball	3	Lewis	3	Calder	3	Simmons	3	Ball	3	Calder	3
5	Simmons	2	Drake	2	Painter	2	Grater	2	Oban	2	Oban	2	Colt	2	Grater	2
6	Calder	1	Simmons	1	Oban	1	Cowell	1	Daley	1	Lemar	1	Simmons	1	Oban	1

Points after 8 races

Ball	5 + 6 + 3 + 4 + 6 + 5 + 3 + 5	37
Cowell		33
Oban	6 + 4 + 1 + 0 + 2 + 2 + 5 + 1	21
Drake	0 + 2 + 0 + 0 + 0 + 6 + 0 + 0	8
Grater	0 + 0 + 0 + 2 + 0 + 0 + 0 + 2	4

Points 1 - 8	Race 11			Race 12		Possible points totals after 12 races					
	Place	Points	Total	Place	Points	Win in 1st	2nd in 1st	3rd in 1st	4th in 1st	5th in 1st	6th in 1st
29	1	6	35	1	12	47	46	45	44	43	42
	2	5	34	2	10	45	44	43	42	41	40
	3	4	33	3	8	43	42	41	40	39	38
	4	3	32	4	6	41	40	39	38	37	36
	5	2	31	5	4	39	38	37	36	35	34
	6	1	30	6	2	37	36	35	34	33	32