



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

[Turn over

**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 1 8.47 or 847 (no units) or £8.47p or (£)1.21 seen	847p Penalise money convention of £....p once throughout task	R3 A1
(ii)	Minutes ironing	2	2 Any time from 14 to 28 (minutes) or 1 2 to 4 seen	If units must be minutes	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 1 One duvet cost x <i>their</i> number ironed 1 Correct answer from <i>their</i> figures or A correct total price for an identified duvet type x 15, 12,....) 1 Correct units including money conventions or Some annotation or Comment about most/average/minimum consistent with their assumptions	60 ÷ <i>their</i> time oe. 15... implies first mark Accept rounded costs throughout Check using calculator and award 4 marks if correct. Penalise money convention of £....p once throughout task	R1 R3 A1 I1 I1

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

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 0 Fewer than 3 correct calculations or answers and no checks					
	Total	20		Totals	7	7	6	

Possible evidence

(c)

Time	Number in hour <i>n</i> = (60 / time)	Single Earnings <i>n</i> x 2.50	Double Earnings <i>n</i> x 3.23	King Earnings <i>n</i> x 3.58	Super-king Earnings <i>n</i> x 4.72	Average Earnings <i>n</i> x 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					Total time	
	Minimum					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 1 263 and 104 seen	Ignore wrong or confused units	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 1 1200cc to 1800cc table A4, Fiesta , Golf Means 3 Both of <i>their</i> means correct or 123 to 124 and 143 or 167 or 2 One of <i>their</i> means correct or 123 to 124 or 143 or 167 or 1 Two correct totals	In both tables, count a wrong inclusion as an error so 4 right and 1 wrong inclusion = 3 right. (-1 for each wrong inclusion) Check means using their figures in table	R1 R2 A1 111 R3

Part	Process	Award	On evidence of	Notes	Skill Standards R A I
b(ii)	Make sensible comparisons between two groups	2	<p>Award up to 2 marks from...</p> <p>1 Identify Amy and Mean for smaller cars less than mean for larger cars or Bigger cars produce, on average, 19 or 42 (g/km) more or converse.</p> <p>1 Most cars in the first table have lower emissions than those in second table.</p> <p>1 Porsche Cayenne (much) larger engine and (much) higher emissions.</p> <p>1 Identify Liam and VW Golf and Skoda Yoti both have emissions of 149 but are in different size groups (tables)</p>	<p>Interpret their comments sensitively.</p> <p>Values do not need to be quoted.</p> <p>Follow through from their means and tabulated values.</p> <p>Do not reward same statement twice.</p> <p>Reward any other sensible comment but not reiterating given ones.</p>	211
c	<p>Calculations to show that driving a Ford (Fiesta) will cost less than an Audi (A4)</p> <p>Use function generator for cost of driving 10,000 miles and compare road tax.</p>	8	<p>Audi</p> <p>3 (£)1474(.10) or (£)1319(.10) and (£)155 or</p> <p>2 (£)1319(.10) or</p> <p>1 (£)155 or 39.8</p> <p>Fiesta</p> <p>3 (£)1111(.40) or (£)1021(.40) and (£)90 or</p> <p>2 (£)1021.40 or</p> <p>1 (£)90 or 51.4</p> <p>and</p> <p>1 Clear calculations, set out so that processes may be seen</p> <p>Ford is cheaper because... (Award 1 from)</p> <p>Car tax is (£)65 cheaper or</p> <p>1 Fuel saving around <i>their</i> (£)298 or</p> <p>Total saving around <i>their</i> (£)363 per year.</p>	<p>Condone any truncation</p> <p>Award marks for any other mileage used. (Check)</p> <p>Award marks for any other mileage used. (Check)</p> <p>Ft <i>their</i> cheapest car</p> <p>ft <i>their</i> fuel calculations</p>	R1 R3 2A1 3I1

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 0 Fewer than 3 correct calculations or answers and no checks		2A2
	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	$867 \div 7 = 123.9$

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	$572 \div 4 = 143$

Mean with Porsche may be used
 $= 835 \div 5 = 167$

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		R2 A1
			1	5 + 5 or 10 or 3 + 3 or 6 or 3 + 5 or 8 seen		
a(ii)	Find maximum number of points for last 7 races	2	2	42 or		R1 A1
			1	7 or 6 seen		
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 9 is from PLACES 9 and 28 are sums of PLACES	R1 A1 I1 I1
			2	37 OR 21 seen or 19 (Ball) AND 28 (Oban) or 9 (difference) or		
			1	Indication of finding some places or points scored		
				And		
			1	“Correct” and quantified comparison with statement (15 points) based on <i>their</i> 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	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	R2 I1
				or		
			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	
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 – <i>their</i> 4 (points in races) 9 and 10	Accept 2 + 2 Or “last two” (races)	A1 I1 I1
				And		
			1	Gary AND one example of how Grater may have scored <i>their</i> 8 points that does not include first place.	Eg 2 nd = 5 AND 4 th = 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	<p>3 (Oban) 47 to 43 points AND he can win or EXTRA points total 14 to 18 AND he can win or</p> <p>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 <i>their</i> total or</p> <p>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</p> <p>And</p> <p>1 State clearly the POSITIONS that Oban must finish in to win the Gold League. (May be implied by points added)</p> <p>And</p> <p>1 State correctly ONE condition on Cowell or Ball that will allow Oban to win with <i>their</i> points for Oban. (Need not be a maximum case.)</p>	<p>He can score 18 points and have more than Cowell</p> <p>Eg $29 + 6 + 6 = 41$ or $12 + 12 = 24$</p> <p>He could finish first and win</p> <p>1 and 1 OR 1 and 2 OR 1 and 3 OR 2 and 1 OR 2 and 1 OR 3 and 1</p> <p>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”.</p>	R2 A1 I1 R3 I1
	Checking	2	<p>2 A clear check of a calculation or</p> <p>1 Statement that an answer is reasonable, or 3 correct calculations throughout task or</p> <p>0 Fewer than 3 correct calculations or answers and no checks</p>		A2 A2
	Total	20		Total	6 7 7

Results of the first eight 100 metre races

Stadium Shanghai Position

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