

GCSE 2004

June Series



Mark Scheme

Mathematics B (3302)

Module 3 Tier 1

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

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Dr Michael Cresswell Director General

The following abbreviations are used on the mark scheme:

M	Method marks awarded for a correct method.
A	Accuracy marks awarded when following on from a correct method. It is not necessary always to see the method. This can be implied.
B	Marks awarded independent of method.
M dep	A method mark which is dependent on a previous method mark being awarded.
ft	Follow through marks. Marks awarded for correct working following a mistake in an earlier step.
SC	Special Case. Marks awarded for a common misinterpretation which has some mathematical worth.
oe	Or equivalent.
eeoo	Each error or omission

MODULE 3 INTERMEDIATE TIER**330031**

1(a)	1.125	B1	
(b)	1.09, 1.112, $1\frac{1}{8}$, 1.08^2 , 1.18	B3 ft	Allow B2 if one is out of position or in reverse order
			or B1 $(1.08^2) = 1.1664$
2	11.6	B2	11.568(1) B1
3	36 pack is 3 times size of 12 pack	M1	or 12 pack is $\frac{1}{3}$ of 36 pack
	$\pounds 1.42 \times 3 = \pounds 4.26$ [or 4.2...]		or $\pounds \frac{4.74}{3} = \pounds 1.58$ (or 1.5...)
	\therefore Standard is cheaper	A1	
			or price per finger Standard $\pounds \frac{1.42}{12} = 11.(83\dots)\text{p}$ Economy $\pounds \frac{4.74}{36} = 13.(16\dots)\text{p}$ Consistent division M1
			\therefore Standard is cheaper A1
			11... and 13... or 8... and 7... Ignore dp but must be consistent M1
4	Time = $\frac{132}{55}$ hours	M1	
	= 2.4 hours	A1	2 hours 4 minutes or 2 hours 40 minutes M1A1
	= [2 hours] '0.4' \times 60 minutes	M1	Dep on first M1
	= 2 hours 24 minutes	A1	SC3 144 minutes
5(a)	Number sold at 50p is $400 - 310 - 24 (= 66)$	M1	
	Receives $310 \times 80\text{p} = \pounds 248$	B1	
	'66' \times 50p (= $\pounds 33$)	M1	M1 for any ($\leq 90 \times 50\text{p}$)
	Total = $\pounds 281$	A1 ft	(one correct)

33003I

5(b)	Profit is (their £281) – £150	M1	Must be a profit
	= £131		
	% profit is $\frac{(\text{their } 131)}{150} \times 100$	M1 dep	
	= 87.3%	A1 ft	Accept 87%
			$\frac{(\text{their } 281)}{150} \times 100$ M1M0 187.3% A1

6(a)	200×1.15	M1	
	= 230 g	A1	
(b)	(Mass at 1 pm on day 2 =) 230×1.15	M1	or 230×1.15^n where $n \geq 2$
	= 264.5 g		
	(Mass at 1 pm on day 3 =) 264.5×1.15		
	= 304.175 g		
	Mass at 1 pm on day 4 $= 304.175 \times 1.15$		
	= 349.80125 g	A1	Accept 349 or 350
	Mass at 1 pm on day 5 $= 349.80125 \times 1.15$		
	= 402.2714375 g		
	After 5 days	A1	If all correct working and 4 (further) days accept No marks for incorrect method OR 1.15, 1.3225, 1.520... M1 1.749 A1 2.01 \Rightarrow 5 days A1

7(a)	£8.49	B1	
(b)	£7.50	B1	

8	€2.80 = 1.12 of pre-VAT price or 112%	M1	or $\frac{2.80}{1.12}$ (= 2.50) M1
	$\text{VAT} = \frac{12}{112} \times \text{€}2.80$	M1	$\text{VAT} = 2.80 - (\text{their } 2.50)$ M1
	= €0.30	A1	= €0.30 or €0.3 A1

33003I

9	$\frac{1.6 \times 10^{10}}{276 \times 10^6}$	M1	Division
	= 58	A2	Accept 57.97 A1 for sight of 5797... or 58...
10	1 melon costs $\frac{4.28}{4}$ (= £1.07)	M1	$\frac{2.14}{2}$
	5 melons cost $5 \times \text{£}1.07$	M1	or $\text{£}4.28 + \text{£}1.07$
	= £5.35	A1	
11(a)	Cost = $\text{£} \frac{30}{1.50}$	M1	Accept complete build up
	= £20	A1	
(b)	Tax = $\frac{6}{100} \times \$25$	M1	or $1.06 \times \$25$ M1
	= \$1.50	A1	= \$26.50 A2
	Cost is \$26.50	A1	Accept \$26.5
12(a)	Estimate is $70 \times 20\text{p}$	M1	Either 70 or 20
	= £14	A1	ft from one used
			Accept $70 \times 19 = \text{£}13.30$ M1A1
			Accept $71 \times 20 = \text{£}14.20$ M1A1
			NB $71 \times 19 = 1349$ no marks
(b)	$\frac{4}{5} \times 40$	M1	
	= 32	A1	SC1 8 and 32 or 8
13(a)	2×9	M1	
	= 18	A1	
(b)	$\frac{80}{500} \times 100$	M1	
	= 16%	A1	
(c)	0.04	B1	

330031

14(a)	Use of exploding tree or division into 2 and 3	M1	Correctly identifying a factor of 2 or 3 ie 2×48 or 32×3
	$2 \times 2 \times 2 \times 2 \times 2 \times 3$	A1	Do not need to see \times signs
	$2^5 \times 3$	A1	
(b)	$36 = 2^2 \times 3^2$	M1	or list factors must include 12
	HCF = 12	A1	SC1 for 6

15(a)	$\frac{300 \times 8}{0.4}$	B1	At least 2 correct
	$= \frac{2400}{0.4}$	B1	Needs both terms correct
	$= 6000$	B1	Accept $\frac{300 \times 10}{0.5} = 6000$ B3
(b)	$\frac{13}{3} - \frac{7}{5}$	M1	Allow one error in 13 or 7
	$= \frac{65}{15} - \frac{21}{15}$	M1	Allow one error in 65 or 21
	$= \frac{44}{15}$ or $2\frac{14}{15}$	A1	Accept either
			or $3\frac{1}{3} - \frac{2}{5}$ oe $= (3)\frac{5}{15} (-)\frac{6}{15}$ or $(4)\frac{5}{15} (-)(1)\frac{6}{15}$ M1 $= 3\frac{-1}{15}$ M1 $= 2\frac{14}{15}$ A1 SC1 $3\frac{1}{15}$ $4.33... - 1.4$ M1
(c)	$\frac{\frac{1}{4} \times 16}{\frac{1}{27} \times (3)^2} = \frac{4}{\frac{1}{3}}$	B1	Need both, not necessarily division
	$= 4 \times \frac{3}{1}$	M1	Must be $\frac{4}{\frac{1}{x}} = 4x$ $\frac{16}{4} \times \frac{27}{9}$ M1
	$= 12$	A1	OR $\frac{4}{\frac{9}{27}} = 4 \times \frac{27}{9}$ M1 $= \frac{108}{9}$ or 4×3 A1 $= 12$ A1
(d)	2.74×10^{-4}	B1	