edexcel

Mark Scheme (Results)

June 2011

International GCSE
Mathematics (4MB0) Paper 01

Edexcel is one of the leading examining and awarding bodies in the UK and throughout the world. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers.

Through a network of UK and overseas offices, Edexcel's centres receive the support they need to help them deliver their education and training programmes to learners.

For further information, please call our GCSE team on 0844 576 0027, or visit our website at www.edexcel.com.

If you have any subject specific questions about the content of this Mark Scheme that require the help of a subject specialist, you may find our **Ask The Expert** email service helpful.

Ask The Expert can be accessed online at the following link:
http://www.edexcel.com/Aboutus/contact-us/

4MB0 Summer 2011 - Paper 1

Question Number	Working	Notes		Mark
1.	Common difference of 5	M1		
	2, 7, 12, 17	A1	2	2
2.	$\dfrac{26-2}{-3-5}$ **OR** $\dfrac{2-26}{5+3}$	M1		
	OR			
	Solving for m			
	26 = -3*m* + *c*			
	2 = 5*m* +c			
	Full method for obtaining *m* (no slips)	M1		
	-3	A1	2	2
3.	10, 12, 14	B2 (-1eeoo)	2	2
4.	3 + 20 = 8*x* (rem. denom. and *x* isolated, one arithmetical slip)	M1		
	$2\dfrac{7}{8}$ **OR** 2.875 **OR** 2.88 **OR** $\dfrac{23}{8}$	A1	2	2
5.	3 or 7 identified as a common factor	M1		
	21	A1	2	2
6.	*x*(*x* – *y*) + *z*(*x* – *y*) **OR** *x*(*x* + *z*) - *y*(*x* + *z*) (<u>no</u> slips)	M1		
	(*x* + *z*)(*x* – *y*)	A1	2	2
7.	$\dfrac{55.43}{115}\times 100$ OR 55.43/1.15 OR $55.43\times\dfrac{20}{23}$	M1		
	£ 48.20	A1	2	2
8.	$\dfrac{x(x+2)-2.x}{2(x+2)}$ **OR** $\dfrac{x^2+2x-2x}{2x+4}$			
	OR $\dfrac{x(x+2)}{2(x+2)}-\dfrac{2x}{2(x+2)}$ (<u>no</u> slips)	M1		
	$\dfrac{x^2}{2(x+2)}$ **OR** $\dfrac{x^2}{2x+4}$	A1	2	2
9.	One term correctly differentiated	M1		
	$6x^2 + 12x^{-5}$	A1	2	2

Question Number	Working	Notes		Mark
10.	$\angle$ *BDA* = 59° **and** $\angle$ *ABD* = 59° $\angle$ in same segment for one of above angles Cc inc. reason for an isos Δ **NB:** The last B mark is dependent on the previous two.	B1 B1 B1	3	3
11.	24 - 3*x* < 20 (Rem. denom., one arithmetical slip) **NB:** Use of "=" instead of inequality: award M1 once the correct inequality has been indicated eg in line below 4 < 3*x* (o.e) 2 **OR** <u>Trial and error</u> Subs *x* = 1 and *x* = 2 into 6 - $\frac{3x}{4}$ Correctly (st *x* = 1 -> 5.25 and *x* = 2 -> 4.5) 2	M1 A1 A1 M1 A1 A1	3 3	3 3
12.	540/5 (108) "108" x 12 (o.e.) **Other Possible Methods:** $\frac{2}{12}N$ and $\frac{7}{12}N$ $\frac{5}{12}N = 540$ **OR** *S* = smallest share, *L* = largest share Use of $\frac{S}{2}$ OR $\frac{L}{7}$ $\frac{S}{2} = \frac{S+540}{7}$ OR $\frac{L}{7} = \frac{L-540}{2}$ £ 1296	B1 M1 B1 M1 B1 M1 A1	3	3
13.	Using 4.5 ½π . 9² - π . "4.5"² 63.6 cm²	B1 M1 A1	3	3

Question Number	Working	Notes		Mark
14.	$\overrightarrow{AB} = \begin{pmatrix} 6 \\ -8 \end{pmatrix}$ $(or\ \overrightarrow{BA} = \begin{pmatrix} -6 \\ 8 \end{pmatrix})$ $\sqrt{(\text{"}6\text{"}^2 + \text{"}8\text{"}^2)}$ 10 (from completely correct working)	B1 M1 A1	 3	 3
15.	240 **OR** 6×40 **OR** 48 (can be implied) $3x + 102 + 60 + 30 = \text{"}240\text{"}$ **OR** $\dfrac{192 + 60 + 30 + 3x}{6} = 40$ 16	B1 M1 A1	 3	 3
16.	$AX \cdot 3 = 12 \times 4$ (o.e) $AX = 16$ $AO = (\text{"}16\text{"} + 3)/2 = 9.5$ cm **OR** $(r = AO)$: $(2r\text{-}3) \times 3 = 12 \times 3$, $6r = 57$ (1 slip) $(x = OX)$: $3 \times (x+3+3) = 12 \times 3$, $x = 6.5$ $AO = 9.5$ cm	M1 A1 A1 ft M1, A1 M1, A1 A1 ft	 3 3	 3 3
17.	2, 9 or 11 seen $\dfrac{2+9}{11}$ (allow one numerical error) 1	B1 M1 A1	 3	 3
18.	(x = exterior angle) $8x + x = 180°$ **OR** $8\left(\dfrac{360}{n}\right) + \left(\dfrac{360}{n}\right) = 180$ (o.e) $x = 20$ **OR** "3240 = 180n" 360/"20" **OR** "3240/ 180" $n = 18$ **OR** (e = interior angle) $e = 8 \times (180 - e)$ $e = 160$ $n = \dfrac{360}{180 - \text{"}160\text{"}}$ $n = 18$	 M1 A1 M1 DEP A1 M1 A1 M1 DEP A1	 4 4	 4 4

International GCSE Mathematics (4MB0) Paper 01 Summer 2011

Question Number	Working	Notes		Mark
19.	$(\sqrt{512} =)$ $16\sqrt{2}$ **OR** $8\sqrt{8}$	B1		
	$(\sqrt{72} =)$ $6\sqrt{2}$ **OR** $3\sqrt{8}$	B1		
	$10\sqrt{2}$	B1		
	10	B1	4	4
20.	$7^2 = 4^2 + 5^2 - 2.4.5.\cos A$	M1		
	$2 \times 4 \times 5 \times \cos A = 4^2 + 5^2 - 7^2$	M1		
	$\cos A = (4^2 + 5^2 - 7^2)/2 \times 4 \times 5$ $(= -\dfrac{8}{40} = -0.2)$ o. **NB:** Allow **1** sign slip in the above 3 M marks	M1 dep		
	$= 102°, 258°, 462°, …$	A1	4	4
21.	(a) correctly labelled line (line going through (0, -5) and (4, 3)) or correct gradient plus line going through (2.5, 0))	B1	1	
	(b) correctly labelled line (line going though (0, 4) and (4, 0) or correct gradient plus line going through (4, 0)) **NB:** (1) Penalise labelling **once**. (2)The lines must be sufficiently long to identify their intersection in (c)	B1	1	
	(c) $x = 3$ $y = 1$ **NB:** (1) Above values **must** be from their diagram. (2) Accept (3, 1)	B1 ft B1 ft	2	4
22.	(a) 1/3 **OR** 0.333 **OR** 33.3%	B1	1	
	(b) 2, 3, 5, 7, 11	B1	1	
	(c) correct diagram (ft on "(b)")	B1 ft	1	
	(d) "15"/36 **OR** "$\dfrac{5}{12}$" **OR** "0.417" **OR** "41.7%" (ie ft on "15" circled outcomes in (c))	B1 ft	1	4
23.	(a) $\begin{pmatrix} 17 & 12+4a \\ 6+2a & 8+a^2 \end{pmatrix}$	B2(-1ee)	2	
	(b) $a = -3$, $\lambda = 17$	B1 B1	2	4

International GCSE Mathematics (4MB0) Paper 01 Summer 2011

Question Number	Working	Notes		Mark
24.	Heights: 4.8, 7.2, 6.4, 1.1 **OR** 24, 36 , 32, 5.5	B1, B1, B1 B1	4	4

25.	(a) attempt at construction (3 sets of arcs seen),
	
	        accuracy
	
	(b) attempt at construction (2 sets of arcs seen)
	
	        accuracy
	
	(c) 60 (± 1) mm
		M1
		
		A1
		
		M1
		
		A1
		
		B1
			2
			
			2
			
			1
				5

26.	(a) $\frac{1}{2}\times\frac{1}{2}x\times[x+(x+4)]$ $\frac{1}{4}x(2x+4)$ **OR** $\frac{1}{2}x(x+2)$ **OR** $0.5x^2+x$ (b) "$2x^2 + 4x = 4 \times 84$" (o.e) $x^2 + 2x - 168 = 0$ (o.e. ie a quadratic but c.a.o) ($x + 14$)($x - 12$) = 0 (o.e, method for solving 3 term quadratic) x = 12 (c.a.o)	M1 A1 M1 A1 M1 (INDEP) A1	2 4	6
27.	$\frac{1}{3}+\frac{1}{5}+\frac{1}{4}$ $\left(=\frac{47}{60}\right)$ "13x/60" = 26 120 **OR** "13/60" = 26 blue sweets (1/60 = 26/13 =) 2 40 (Red) 24 (Yellow) 30 (Green)	M1 M1 A1 M1 A1 A1 A1 A1	6	6

Question Number	Working	Notes		Mark
28.	(a) three terms, at least one correctly differentiated	M1		
		A1	2	
	$15 + 4t - 3t^2$			
	(b) "(a)" = 0	M1		
	$t = 3$ c.a.o from a correct eq^n	A1		
	$s("3")$	M1 DEP		
	36	A1		
			4	6
29.	**NB:** Penalise ncc **ONCE** only in this question	M1		
	(a) $10/AD = \sin 26°$	A1	2	
	22.8 cm			
	(b) $16/"22.8" = \tan \angle CAD$	M1		
	$35.0°/35.1°$ (accept 35)	A1	2	
	(c) any correct trig/Pythagorean method for AC	M1		
	Eg $\sin"35.0" = \dfrac{16}{AC}$ **OR** $AC^2 = 16^2 + "22.8"^2$ ($AC = 27.86$)			
	$\dfrac{AB}{"27.86"} = \cos "29.0"$	M1 DEP		
	OR $\sin(26 + "35.0") = \dfrac{AB}{"27.86"}$			
	OR Extend *BC* to *G* so that *BG* is perpendicular to *EG* $DG = 16 \times \cos 26$ $AB = 10 + "16 \times \cos 26"$	M1 M1 DEP		
	24.3/24.4 cm	A1	3	7

Further copies of this publication are available from
International Regional Offices at www.edexcel.com/international

For more information on Edexcel qualifications, please visit
www.edexcel.com

Alternatively, you can contact Customer Services at
www.edexcel.com/ask or on + 44 1204 770 696

Ofqual

Llywodraeth Cynulliad Cymru
Welsh Assembly Government

CCEA
Rewarding Learning