GCSE MARKING SCHEME

JANUARY 2016

APPLICATIONS OF MATHEMATICS
UNIT 2 - FOUNDATION TIER
4362/01

INTRODUCTION

This marking scheme was used by WJEC for the 2016 examination. It was finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conference was held shortly after the paper was taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conference, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about this marking scheme.

GCSE APPLICATIONS OF MATHEMATICS
UNIT 2 - FOUNDATION TIER

MARK SCHEME – JANUARY 2016

<table>
<tr><th>Applications Unit 2 Foundation Tier January 2016</th><th></th><th>Comments</th></tr>
<tr><td>1. (a) tangent labelled correctly
Radius labelled correctly
(b) “ The <u>diameter</u> is twice the length of the <u>radius</u>”
(c) Correct explanation of what a chord is.

Correct explanation of what a segment is.</td><td>B1
B1
B1
E1

E1

5</td><td>Accept unambiguous incorrect spellings

For B1 both words must be in the correct place
Eg “the chord is a (straight) line from one side of a circle to the other.”

Eg “the region (or area) between a chord and the circle (outside)”.</td></tr>
<tr><td>2. (a) Frequency/tally table set up, labelled with colours, tallies and frequency (or equivalent). Colours listed correctly.

(b) A disadvantage</td><td>B3

E1

4</td><td>Accept other colours also listed and/or use of “other”.
Award B2 for frequency/tally table set up, labelled with colours and either tallies or frequency (or equivalent).

Award B1 for an attempt at setting up a frequency/tally table.

Eg “he may record one colour in the wrong section”, “there could be other colours”, “easy to make a mistake”, “people may not want to answer”, “it is time consuming”, “it doesn’t give full details”, “ you won’t know what colours it is for other”, “not everyone has a case for their phone”.
Accept consideration of where the data is to be collected.
Ignore incorrect disadvantages if a correct one is seen.</td></tr>
<tr><td>3.
False
True
True
False
False</td><td>B3

3</td><td>Award B2 for any 4 correct
Award B1 for any 3 correct</td></tr>
<tr><td>4. (a) (i) T and ⊣ selected (circled) as similar letters

(ii) T and T selected (circled) as congruent letters
(b)

<table><tr><th></th><th>Rotational symmetry</th><th>No rotational symmetry</th></tr><tr><td>Reflection symmetry</td><td>H I</td><td>B W</td></tr><tr><td>No reflection symmetry</td><td>N</td><td>F Q</td></tr></table></td><td>B1

B1

B4

6</td><td>

Award B3 for 6 correctly placed letters.
Award B2 for 4 or 5 correctly placed letters.
Award B1 for 2 or 3 correctly placed letters.

Letters placed in more than one box are marked as incorrect.</td></tr>
</table>

Applications Unit 2 Foundation Tier January 2016		Comments
5. (a) 23	B1	
(b) April	B1	Do not accept 8
(c) April 8 + 11 = 19 May 14 + 15 = 29 June 19 + 23 = 42 July 26 + 16 = 42 August 10 + 10 = 20 June and July	M1 A1	Award M1 for attempt to add at least 3 months.
(d) Girls = 77 AND Boys = 75 OR accept difference of 2 or -2	B1	
No, stated or implied, as there are more girls than boys.	E1	Dependent on attempt to add girls and add boys
(e) ¾ × 36 or 1/3 × 33	M1	Award A1 for either 27 or 11.
27 and 11	A2	Answers may be seen on the diagram.
Bars drawn to a height of 27 and 11	B1	FT bars for "their 27" and "their 11"provided at least M1 awarded. Allow wider bars for first B1 only. Allow bars drawn in incorrect order for first B1.
Bars drawn in correct order (Girls then boys), September labelled and correct width.	B1	
	11	
6. (a) $7n = 28$ or equivalent	B1	
$n = 4$	B1	Answer only award B0, B1. Accept embedded answers
(b) $6 + c < 15$ or equivalent	B1	
$c < 9$	B1	Answer only award B0, B1. Accept embedded answers
	4	

Applications Unit 2 Foundation Tier January 2016		Comments
7. (Barcelona Bus Turistic) 2 × (£)30.50 + (£)17.50	M1	*Be aware of individual values changed to other currency*
= (£)78.5(0)	A1	
(Barcelona City Tour) 2 × (€)35 + (€)20	M1	FT if same number of adults and children used in first M1
= (€)90	A1	*If M0 A0 M0 A0 awarded, award SC1 for (2 × 23.5(0) + 14 =) (£)61 and SC1 for (2 × 27 + 16 =) (€)70 from using the costs of the one day tickets.*
(Barcelona Bus Turistic in euros)		
78.5(0) × 1.24	M1	FT "their 78.5(0) *Alternative method 78.5(0) - 90 ÷ 1.24 M1*
= (€)97.34	A1	*= (£)5.92 A1* *(5.92 × 1.24 =) €7.34 B1*
Barcelona City Tour is cheapest by €7.34	B1	FT their derived values in euros
Look for • spelling • clarity of labels • the use of notation (watch for the use '=' "£" being appropriate)	Q W C 2	
QWC2: Candidates will be expected to • present work clearly, with words explaining process or steps AND • make few if any mistakes in mathematical form, spelling, punctuation and grammar in their answer QWC1: Candidates will be expected to • present work clearly, with words explaining process or steps OR • make few if any mistakes in mathematical form, spelling, punctuation and grammar in their final answer	9	QWC2 Presents relevant material in a coherent and logical manner, using acceptable mathematical form, and with few if any errors in spelling, punctuation and grammar. QWC1 Presents relevant material in a coherent and logical manner but with some errors in use of mathematical form, spelling, punctuation or grammar OR evident weaknesses in organisation of material but using acceptable mathematical form, with few if any errors in spelling, punctuation and grammar. QWC0 Evident weaknesses in organisation of material, and errors in use of mathematical form, spelling, punctuation or grammar.

Applications Unit 2 Foundation Tier January 2016		Comments
8. (a) 15 ÷ 3.5 or 8 ÷ 3.5 4(.2857…) and 2(.2857) Number of layers given as 2 16 (macaroons)	M1 A2 B1 B1	*Answers may be given on a diagram* Award A1 for either 4(.2857…) or 2(.2857) FT "their 4" × "their 2" × 2 or 3 layers provided M1 awarded.
(b) 5 × 15 × 8 600 cm^3	M1 A1 U1	 Independent mark
(c)(i) 5 + 5 + 5 + 5 + 15 + 15 + 8 + 8 + 20 86 (cm)	M1 A1	 CAO
No, can only use green ribbon (as do not have enough pink ribbon)	E1	FT their derived 86(cm) *Alternative markscheme.* *(5 + 5 + 5 + 5 + 15 + 15 + 8 + 8 = 66(cm))* *Award M1 for 80 – 66 OR 90 – 66* *Award A1 for 14 AND 24 CAO* *Award E1 for correct statement such as "Can only use green*." *FT their derived 14 and 24.* *If M0, A0, Award SC1 for* *(4 × 15 + 2 × 8 + 2 × 5 + 20 =) 106 (cm)* *OR* *(4 × 8 + 2 × 15 + 2 × 5 + 20 =) 92 (cm)* FT their derived 86(cm) for correct interpretation for E mark.
(ii) (£)6 ÷ 300(cm) × 86(cm)	M1	FT their derived 86(cm). If units given they must be the correct units. *Alternative method* *600(p) ÷ 300(cm) × 86(cm)* *OR (£)6 ÷ 3(m) × 0.86(m)* *OR 600(p) ÷ 3(m) × 0.86(m)*
(£)1.72 or 172(p)	A1	FT equivalent difficulty *Note for use of 90 (cm)* *(£)6 ÷ 300(cm) × 90(cm) M1* *(£)1.8(0) or 180(p) A1*
	13	
9(a) (£)36000 or (£)36 thousand	B1	B0 for 36
(b) Advertising (£) 8 000 or (£)8 thousand AND Sales (£) 30 000 or (£)30 thousand (and indication on the scatter diagram)	B2	B1 for 8 AND 30 or appropriate indication on the diagram
(c) Line of best fit with appropriate trend shown	B1	
(d) Use of their gradient of the line of best fit Gradient answer in the range (£)5 to (£)8	M1 A1	 When indication on the diagram or working seen, allow SC1 for an answer derived from use of ratio or proportion sales : advertising for any point (other than company (b)) or a point on the line of best fit, or sales £1000s / advertising £1000s
(e) (i) Conclusion, e.g. 'yes selling more the more money spent', 'don't know as only 11 companies asked', 'yes, as there is positive correlation'	E1	Allow 'a product may not be successful if not advertised'
(i) (ii) Next step, e.g. 'gather more data', 'ask more companies'	E1	Do not accept 'ask more people' as this is about shampoo companies, so this standard answer to data questions is insufficient unless accompanied by further relevant detail
	8	

Applications Unit 2 Foundation Tier January 2016		Comments
10(a)(i) G4 588 D5 8	B1 B1	
(ii) 407 ÷ 18.5(0) (= 22) (22 – 6 – 2)÷2 7	M1 m1 A1	FT 'their 22' if M1 awarded CAO *Alternative:* *407 - 8 × 18.5(0) (=407 – 148 = 259) M1* *(259 ÷ 18.5(0)) ÷ 2 (=14÷2) m1* *FT 'their 259' if M1 awarded* *7 CAO A1*
(iii) (G3 =) B3 * (C3 + D3 + E3 + F3) or equivalent 7	B2	B1 for 25 * (C3 + D3 + E3 + F3) or for B3 * C3 + D3 + E3 + F3 or for an appropriate expression with 1 error
10(b)(i) (ii) Statement, e.g. 'no, it may seem that way because each customer in America buys a lot of boots', 'could be, but it's only based on one day', 'no, as both America and Europe have orders as single digits (as well as in the 10s), 'no, as Americans just buy more boots', 4	B3 E1	B2 for 4 or 5 correct entries B1 for 2 or 3 correct entries Allow 'yes (it seems that way) as many customers in Europe buy 1 pair whilst someone in America bought 23 pairs' – there must be a Europe / America comparison. Allow 'yes (it seems that way), as the average for America is much higher' WITH either a reasonable attempt to calculate both means OR with reference to the medians
11(a) 60:96 considered, e.g. sight of 96/60 or 1.6 80 × 96 ÷ 60 or equivalent 128(p) or (£)1.28 (b) (96cm laces weigh 8 × 1.6 or 8 × 96/60 =) 12.8 (g) 0.4(0) × 12.8 5.12 (g of nylon) 6	M1 m1 A1 B1 M1 A1	*OR (60cm is 80p,1cm is) 80/60 (=1.3(33…p)* *OR 96cm costs 80 + 36×80÷60* CAO If units are given they must be correct FT their '×1.6', FT their derived 12.8g CAO *If no marks, SC1 for (0.4×8 =) 3.2(g)*