GCSE MARKING SCHEME

JANUARY 2016

MATHEMATICS UNITISED - UNIT 3
FOUNDATION TIER
4353/01

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.

2016 January UNIT 3 (calculator allowed) Foundation Tier Mark Scheme	Mark	Comments (page 1)
1. (a) (£)5·67 (£)6·02 (£)2·06 (b) (i) 0·2×(£)13·75 (£)2·75 (ii) (£)16.5(0) (c) (£)6·49	B1 B1 B1 M1 A1 B1 B1 7	 FT values in the table Or equivalent method Do not penalise (£)13·75±(£)2·75 FT (£)13·75+'their (£)2·75' FT (£)22·99 –'their (£)16.5(0)'
2.(a) 6:20 p.m. (b) 18:55 (c) 2 hours 40 minutes or 160 minutes.	B1 B2 B2 5	 B1 for 6:55(p.m.), or five minutes to 7 (or equivalent) not in 24 hour clock system or 18:55p.m. B1 for 2:40 or 2·40
3. (a) 18 (b) (A =)5×4·3+18 39·5	B1 M1 A1 3	 Correct substitution with intention to multiply 5×4·3
4. (a) −72 (b) 3	B1 B1 2	
5. Evidence of counting squares 56-63 (squares) 5600-6300 (m^2)	M1 A1 B1 3	 F.T. 100×their area Answer in the range 5600-6300 (m^2) gets M1 A1 B1.
6.(a) 28 (b) 12·4 (c) 8	B2 B2 B1 5	B1 for 27·5(317…) B1 for 12·418576

2016 January UNIT 3 (calculator allowed) Foundation Tier Mark Scheme	Mark	Comments (page 2)
7. (Area of the lawn=) 12×8 (= $96m^2$) (Weight of seed needed in grams = 96×40=) 3840(g) (Weight of seed needed in kg =) 3.84(kg) (boxes) (Number of boxes needed =) 4 (boxes) (Total cost= (£) 6·30× 4 =) (£) 25.20 or 2520(p) Alternative: (Area of the lawn=) 12×8 (= $96m^2$) B1 (Area of seed covered by one box = 1000÷40 =) 25 (m^2) B1 (Number of boxes needed = 96 ÷25=) 3.84 B1 (Whole number of boxes =) 4 (boxes) B1 (Total cost= (£)6·30× 4 =) (£) 25.20 or 2520(p) B1 Look for • Spelling • Clarity of text explanations, • Consistent use of £ or p and mathematical symbols, • Consistent use of g or kg QWC2: Candidates will be expected to • Present work clearly, with words explaining process and steps AND • Make few, if any, mistakes in mathematical form, spelling, punctuation and grammar in their final 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.	B1 B1 B1 B1 B1 QWC 2 7	 Conversion of 'their 3840(g)' to kg by ÷1000 FT their derived weight providing rounding is required. FT 'their whole number of boxes'. FT 96 ÷ 'their 25'providing rounding is required. FT 'their derived whole number of boxes'. 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 weakness in organisation of material but using acceptable mathematical form, with few, if any, errors in spelling, punctuation and grammar. QWC0 Evident weakness in organisation of material, and errors in use of mathematical form, spelling, punctuation and grammar.
8. (a) 1, 5, 15, 17, 20, 40 (median=) 16 (b) 8 14 17	M1 A1 B3 5	Correctly order the six data values without omissions. B1 for range of 9 B1 for total score 39
9. $80\times75\times60$ or $0.8\times0.75\times0.6$ =360000 or =0.36 cm^3 m^3	M1 A1 U1 3	Or equivalent in metres ISW if 360000 cm^3 seen.
10. (a) $b = 6$ (b) (x =) 8 (cm) (y=) 8 – 6.3 (y =) 1.7(cm) CAO	B2 B1 M1 A1 5	B1 for $a = 11$ or $a + 5 = 16$ or equivalent. If no marks then SC1 for b = 'their a'−5 FT 'their derived x' Alternative: (40 – 5 × 6.3) ÷ 5 M1 (y =) 1.7(cm) A1 (x =) 8 (cm) B1 FT 'their derived y'

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11. Use Overlay. Correct readings from bar chart. Milk-shake 15, Water 30, Juice 35, No Drink 10 3 or 2 angles correct and correctly labelled.	 B1 B2 3	 Seen and used or implied as used. Water 120(^{0}), Juice 140(^{0}), No Drink 40(^{0}). All ±2 ^{0}. OR B1 2 or 3 angles correct, labels not fully correct B1 1 angle correct and correctly labelled
12.(a) Comment on the change of steepness, slope or gradient of the line. (b) 6 (miles) (c) 10:30 (d) 10 (mins) (e) 10 ÷ 1/3 or 10×3 or 10 (miles) in 20 (mins) indicated 30 (mph)	B1 B1 B1 B1 M1 A1 6	
13. (a) Correct frequencies (b) (3 + 4 + 6=) 13 (c) 21 ≤ BMI < 23 (d) Correct frequency diagram (e) (Class B are likely to be older) with an appropriate explanation referring to the frequency diagrams.	B2 B1 B1 B2 E1 7	B1 if one error. One misplaced data value results in two incorrect frequencies. FT frequencies in table throughout question. Or any unambiguous indication. B1 if translated OR for at least 3 bars correct OR if height correct but slight gaps between the bars. **If frequency polygon drawn (with or without frequency diagram), or indication of points at correct heights only, B0 in all cases** A correct reference to the diagrams **must** be made. e.g. The heights of the bars in class B are greater for higher BMI groups, suggesting that more boys in class B have higher BMI.
14. (Ratio =) 1:2 or equivalent (1 part =) 45 ÷ 3 William £15 Rushan £30	B1 M1 A1 3	Allow 2:1 FT the sum of their ratio. CAO William 30 Rushan 15 gets B1 M1 A0
15. (1/12× 510) 42·5(0) OR (0·016 × 510) 8·16 510 – 42.5(0) OR 510 + 8.16 = (£)467·5(0) OR = (£)518·16 1·016 × 467·5(0) OR (11/12) × 518·16 (Cost of season ticket =) (£)474·98 (Saving =) (£)35·02	B1 M1 A1 M1 A1 B1 6	 (11/12)×510 OR 1.016 ×510 gains B1M1. FT 'their 467.50' OR 'their 518·16'. FT provided at least one M1 marks awarded.
16. $8y - 3 = 4y + 16$ $8y - 4y = 16 + 3$ $y = 4\frac{3}{4}$ OR 4·75 OR 19/4	B1 B1 B1 3	FT until 2nd error. Mark final answer.
17. Squaring at least two lengths $8^2 + 15^2$ (= 64 + 225 = 289) $17^2 = 289$ or $\sqrt{289}$ is 17 (and conclusion)	B1 M1 A1 3	 Accept equivalent methods.
18. ½×π×7.8 +7.8 =20·(05….) (Length of side of square = 20 divided by 4=) 5(·01….cm) Area of square =25·(1…..) (cm^2)	M1 A1 B1 B1 4	Complete calculation of the perimeter of the semicircle. FT their perimeter from in a calculation involving π. CAO