

# **GCSE MARKING SCHEME**

# **MATHEMATICS - UNITISED**

# **SUMMER 2014**

#### INTRODUCTION

The marking schemes which follow were those used by WJEC for the Summer 2014 examination in GCSE MATHEMATICS - UNITISED. They were finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conferences were held shortly after the papers were 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 conferences was to ensure that the marking schemes were 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' conferences, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about these marking schemes.

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#### **UNIT 1 - FOUNDATION TIER**

Ribbon marking for 1(a) and 1(b).         1, (a)       60025         Five hundred and fifty thousand seven hundred and four       B1         (b)       Sight of 481679         482000       B1         2. (a)       0, 1, 2, 3 and 4 shown on the horizontal axis.         Uniform scule starting at 0 on the frequency axis.       V         Five vertical lines at correct height (2 2mm).       V         2. (b)       (6 × 0) + 8 × 1 + 5 × 2 + 2 × 3 + 1 × 4         -28       V         2. (b)       (6 × 0) + 8 × 1 + 5 × 2 + 2 × 3 + 1 × 4         -28       V         2. (b)       (6 × 0) + 8 × 1 + 5 × 2 + 2 × 3 + 1 × 4         -28       View with diagram.         2. (b)       (6 × 0) + 8 × 1 + 5 × 2 + 2 × 3 + 1 × 4         -28       View with diagram for B3 marks.         81       for our correct order. F.T. their temperatures.         81       for our correct possible folice with no cost or an incorrect cost.         81       for our correct order. F.T. their temperatures.         81       for our correct combination with cost.         4(a)       A correct cost.         81       for a correct cost.         81       for a correct cost.         81       for a correct cost. <t< th=""><th>JUNE 2014 UNIT 1 Foundation Tier</th><th>~</th><th>Mark</th><th>Comments</th></t<>	JUNE 2014 UNIT 1 Foundation Tier	~	Mark	Comments
<ul> <li>1. (a) 69025</li> <li>Five hondred and fifty thousand seven hundred and four (b) Sight of 481679 48200</li> <li>2. (a) 0. 1. 7. 3 and 4 shown on the horizontal axis.</li> <li>Five vertical lines at correct height (± 2mm).</li> <li>2. (a) 0. 1. 7. 3 and 4 shown on the horizontal axis.</li> <li>Five vertical lines at correct height (± 2mm).</li> <li>V</li> <li>B1</li> <li>Five vertical lines at correct height (± 2mm).</li> <li>V</li> <li>B1</li> <li>For vertical lines, at correct height (± 2mm).</li> <li>V</li> <li>B1</li> <li>For vertical lines, at correct height (± 2mm).</li> <li>V</li> <li>B1</li> <li>C (b) (6 × 0) + 8 × 1 + 5 × 2 + 2 × 3 + 1 × 4</li> <li>(c) (6 × 0) + 8 × 1 + 5 × 2 + 2 × 3 + 1 × 4</li> <li>(c) (a) A correct combination with cost.</li> <li>V</li> <li>B2</li> <li>C (b) (a) A correct combination with cost.</li> <li>(c) (a) A correct combination with cost.</li> <li>(c) (a) A correct combination with cost.</li> <li>(c) (a) A correct combination, with cost.</li> <li>(c) (a) A correct combination, with cost.</li> <li>(c) (a) A correct combination, with cost.</li> <li>(c) (a) (a) (a) (a) (b) (b) (b) (c) (c) (a) (a) (b) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c</li></ul>	Ribbon marking for 1(a) and 1(b).			
(b)Sight of 481679 482000B1F.T. 550704 - their number for Anglessy' F.T. form heir calculation. Implies first B1 if no contradicting work.2. (a)0, 1, 2, 3 and 4 shown on the horizontal axis. 	1. (a)69025Five hundred and fifty thousand seven hundred and four		B1 B1	Ignore incorrect spelling.
2. (a) 0, 1, 2, 3 and 4 shown on the horizontal axis. Uniform scale starting at 0 on the frequency axis. Five vertical lines at correct height (± 2mm).       B1       Ignore unequal spacing.         B1       Five vertical lines, at correct height (± 2mm).       V       B1       Require a correct height.         C. (b) (6 × 0) + 8 × 1 + 5 × 2 + 2 × 3 + 1 × 4       M1       For the intent to multiply values by their frequencies and then add.         2. (b) (6 × 0) + 8 × 1 + 5 × 2 + 2 × 3 + 1 × 4       M1       For the intent to multiply values by their frequencies and then add.         3. View with diagram       -28       A1       C.A.O.         3. View with diagram for B3 marks.       B3 for four correct entries. B2 for three correct entries.         B3 for four correct entries. AD for three correct entries.       B1 for an incorrect cost.         A different combination with cost.       V       V         4(a) A correct combination with cost.       V       V         Look for equiling       -       -         • durity of ext explanations, • the rac of mation (wach for the use of '=', £ heing appropriate)       V       QWC         • correct units shown       QWC1: Presents relevant material in a coherent and logical manner, using acceptable mathematical form, spelling, punctuation and grammar.       QWC2         • or in the correct froal asswer.       QWC1: Presents relevant material in a coherent and logical manner, using acceptable mathematical fo	(b) Sight of 481679 482000		B1 B1	F.T. 550704 – 'their number for Anglesey' F.T. from their calculation. Implies first B1 if no contradicting work
Uniform scale starting at 0 on the frequency axis.       V       R1         Five vertical lines at correct height (± 2mm).       V       B2         C (b) (6 × 0) + 8 × 1 + 5 × 2 + 2 × 3 + 1 × 4       M1       For four vertical lines at correct height.         B (c) for four vertical lines at correct height.       B1 for five bars drawn at correct height.         B (c) for four vertical lines at correct height.       B1 for five bars drawn at correct height.         B (c) for four vertical lines at correct height.       B1 for sight of five correct plots.         S. View with diagram       -28         B (c) for a correct outries. B2 for three correct entries.         B (c) for a correct tors.       B1 for four orrect corts.         4(a) A correct combination with cost.       V         A different combination with cost.       V         A different combination with cost.       V         A different correct possible choice with no cost or an incorrect cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         B1 for a different correct possible choice with no cost or an incorrect cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         B2 gaining       c clarity of tet explanations,         • chairy of tet	2. (a) 0, 1, 2, 3 and 4 shown on the horizontal axis.	$\checkmark$	B1	Ignore unequal spacing.
Five vertical lines at correct height (± 2mm).       ✓       B2       F.T. where possible from a previous B0.         Accept vertical lines at correct height.       B1 for four vertical lines at correct height.       B1 for four vertical lines at correct height.         B1 for four vertical lines at correct height.       B1 for four vertical lines at correct height.         B1 for sight of five correct plots.       B1 for four vertical lines at correct height.         B1 for sight of five correct plots.       C.A.O.         3. View with diagram       F.T. where possible choice with no cost or an incorrect combination of undersam.         B2       B1 for a incorrect combination of at least four continers with a correct cost.         B4 (a) A correct combination with cost.       ✓         A different combination with cost.       ✓         A different combination with cost.       ✓         B2       B1 for a different correct cost.         B1 for a different incorrect cost.       B1 for a different in a coherent and logical manner, using acceptable choice with no cost or an incorrect cost.         B1 for a different incorrect to distance or figure and form, spelling, punctuation and grammar.       QWC2         CWC2: Candidates will be expected to       ✓         • present work clearly, with words explaining process or steps.       OR         WC2: Candidates will be expected to          • present work c	Uniform scale starting at 0 on the frequency axis.	$\checkmark$	B1	-9
Accept intent to draw vertical lines at correct height. BI for fore versical lines at correct height. BI for four versical lines at correct height. BI for due with diagram for B3 marks. B3 for four order tottics. B2 for three correct entries. B1 for one two correct entries. B1 for one two correct entries. B1 for one two correct contries. B1 for one two correct contries. B1 for a correct combination with cost.         4(a) A correct combination with cost.       V       B2         4(a) A correct combination with cost.       V       B2         4(a) A correct combination with cost.       V       B2         A different combination with cost.       V       B2         A different combination with cost.       V       B2         A different combination with cost.       V       B2         Look for • apelling • clarity of text explanations, • the use of notthe weak for the use of '=', £ being appropriate)       V       QWC         VC2: Candidates will be expected to • present work clearly, with words explaining process or steps. OR       V       QWC1. Presents relevant material in a coherent and togical manner, using acceptable mathematical form, appling punctuation and grammar and include units in their final answer.       M1         4(b)       Use of 15 x 11 Sight of 165(m <sup>2</sup> ) AND 'Medium box'       M1       Implied by sight of 165(m <sup>2</sup> ). A1	Five vertical lines at correct height ( $\pm 2$ mm).	$\checkmark$	B2	F.T. where possible from a previous B0.
b) 10 100 veitual miss at any at correct height.         B) 10 1000 veitual miss at any at correct height.         B) 16 r sight of five correct plots.         2. (b) (6 × 0) + 8 × 1 + 5 × 2 + 2 × 3 + 1 × 4         -28         3. View with diagram         Berlin       Paris         2. (c) (b) (b) (b) (b) (b) (b) (b) (b) (b) (b		$\checkmark$		Accept intent to draw vertical lines.
2. (b)(6 × 0) + 8 × 1 + 5 × 2 + 2 × 3 + 1 × 4MIB1 for sight of five correct plots.2. (b)(6 × 0) + 8 × 1 + 5 × 2 + 2 × 3 + 1 × 4MIFor the intent to multiply values by their frequencies and then add.2. (b)(6 × 0) + 8 × 1 + 5 × 2 + 2 × 3 + 1 × 4MIFor the intent to multiply values by their frequencies and then add.2. (b)(6 × 0) + 8 × 1 + 5 × 2 + 2 × 3 + 1 × 4MIFor the intent to multiply values by their frequencies and then add.2. (c)(c)(c)(c)(c)2. (c)(c)(c)(c)2. (c)(c)(c)(c)2. (c)(c)(c)(c)2. (c)(c)(c)(c)4(a)A correct combination with cost.(c)4(a)A correct combination of at least four containers with a correct cost.B1for a different correct possible choice with no cost or an incorrect cost.B1for a different correct possible choice with no cost or an incorrect cost.B2B1for a different correct possible choice with no cost or an incorrect cost.B2B1for a different correct possible choice with no cost or an incorrect cost.B2B1for a different correct possible choice with no cost or an incorrect cost.B2B1for a different correct possible choice with no cost or an incor				B1 for five bars drawn at correct height.
2 (b) (6 × 0) + 8 × 1 + 5 × 2 + 2 × 3 + 1 × 4       = 28         3. View with diagram       = 28         3. View with diagram       = 28         3. View with diagram for B3 marks.       B3 B3 for four correct entries. B2 for three correct entries.         3. View with diagram.       B3 B3 for four correct entries. Allow on diagram.         4(a) A correct combination with cost.       ✓         4(a) A correct combination with cost.       ✓         A different combination with cost.       ✓         A different combination with cost.       ✓         b for a different incorrect cost.       B1 for a correct possible choice with no cost or an incorrect cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         B2 main incorrect cost.       B1 for a different incorrect cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         B2 main incorrect cost.       B1 for a different incorrect cost.         B2 main incorrect cost.       B1 for a different incorrect cost.         B2 main incorrect cost.       B2 main incorrect cost.         B2 main incorrect cost.       B2 main incorrect cost.         B2 main incorrect cost.       B2 main incorrect cost.         B2 main incorect cost. </td <td></td> <td></td> <td></td> <td>B1 for sight of five correct plots.</td>				B1 for sight of five correct plots.
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	2. (b) $(6 \times 0) + 8 \times 1 + 5 \times 2 + 2 \times 3 + 1 \times 4$		M1	For the intent to multiply values by their frequencies and
= 28A1C.A.O.3. View with diagram $= 28$ A1C.A.O. $= 28$ $= 28$ A1C.A.O. $= 28$ $= 26$ $= 26$ $= 28$ $= 28$ $= 26$ $= 26$ $= 28$ $= 25$ $= 26$ $= 23$ $= 34$ $= 25$ $= 26$ $= 23$ $= 34$ $= 25$ $= 26$ $= 23$ $= 34$ $= 25$ $= 26$ $= 23$ $= 34$ $= 25$ $= 26$ $= 23$ $= 34$ $= 32$ $= 26$ $= 26$ $= 26$ $= 26$ $= 26$ $= 26$ $= 26$ $= 4(a)$ $= 22$ $= 23$ $= 28$ $= 4(a)$ $= 23$ $= 23$ $= 28$ $= 4(a)$ $= 23$ $= 23$ $= 23$ $= 126$ $= 23$ $= 23$ $= 23$ $= 126$ $= 23$ $= 23$ $= 23$ $= 126$ $= 2322$ $= 2322$ <tr< td=""><td>20</td><td></td><td></td><td>then add.</td></tr<>	20			then add.
3. Vet with diagram       Prague         25       26 to 29       32       34 to 36         4(a) A correct combination with cost.       81 for one or two correct entries. Allow on diagram. For correct order. F.T. their temperatures.         4(a) A correct combination with cost.       81 for a correct particle with no cost or an incorrect cost.         B1 for a fine correct order. F.T. their temperatures.       81 for a correct cost.         B1 for a incorrect cost.       81 for a correct cost.         B1 for a fine correct order.       81 for a correct cost.         B1 for a fine correct cost.       81 for a incorrect cost.         B1 for a fine correct cost.       81 for a correct ost.         B1 for a fine correct cost.       81 for a fine correct cost.         B1 for a fine correct cost.       81 for a fine correct cost.         B1 for a fine correct cost.       81 for a fine correct cost.         B1 for a fine correct cost.       81 for a fine correct cost.         Look for       9 correct intis shown         QWC2: Candidates will be expected to       9 correct intis shown         QWC1: Candidates will be expected to       9 correct intis shown explaining process or steps.         QWC1: Candidates will be expected to       9 correct indicates in organisation of material in a coherent and logical manner, but with some errors in use of mathematical form, spelling, punctuation and grammar.	= 28		Al	C.A.O. View with diagram for P2 marks
Dim       Dim <thd< td=""><td>Berlin Paris London Prague</td><td></td><td>B3</td><td>B3 for four correct entries, B2 for three correct entries.</td></thd<>	Berlin Paris London Prague		B3	B3 for four correct entries, B2 for three correct entries.
4(a) A correct combination with cost.       B1       For correct order, F.T. their temperatures.         4(a) A correct combination with cost.       B2       B1 for a correct cost.       B1 for a correct cost.         A different combination with cost.       B1       For a different correct possible choice with no cost or an incorrect cost.         B1 for a different correct possible choice with no cost or an incorrect cost.       B1 for a different correct possible choice with no cost or an incorrect cost.         B2       B1 for a different incorrect combination of at least four containers with a correct cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         Cost for       • spelling         • child bas solution (watch for the use of '=', £ being appropriate)       • QWC2. Presents relevant material in a coherent and logical manner, using acceptable mathematical form, and with few if any errors in use of mathematical form, spelling, punctuation and grammar.         QWC1: Candidates will be expected to       • present work clearly, wit	25 26 to 29 32 34 to 36		23	B1 for one or two correct entries. Allow on diagram.
<ul> <li>4(a) A correct combination with cost.</li> <li>4(a) A correct combination with cost.</li> <li>A different combination with cost.</li> <li>A different combination with cost.</li> <li>B1 for a different cost.</li> <li>B1 for a different cost.</li> <li>B1 for a different correct cost.</li> <li>B1 for a different correct cost.</li> <li>B2</li> <li>B2</li> <li>B1 for a different correct cost.</li> <li>B1 for a different correct cost.</li> <li>B2</li> <li>B2</li> <li>B2</li> <li>B2</li> <li>B2</li> <li>B1 for a different correct cost.</li> <li>B1 for a different correct cost.</li> <li>B1 for a different correct cost.</li> <li>B2</li> <li>B1 for a different correct cost.</li> <li>B2</li> <li>B1 for a different incorrect cost.</li> <li>B2</li> <li>B1 for a different incorrect cost.</li> <li>B2</li> <li>B1 for a different incorrect cost.</li> <li>B1 for a different incorrect cost.</li> <li>B1 for a different incorrect cost.</li> <li>B2</li> <li>B2</li></ul>			B1	For correct order. F.T. their temperatures.
A different combination with cost.       Incorrect cost.       B1 for a incorrect cost.         B1 for a different correct cost.       B2       B1 for a different correct cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         Septing       Cost       Cost         • clarity of text explanations.       • the use of notation (watch for the use of '=', £ being appropriate)       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.         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.       QWC0. Evident weakness in organisation of material but using acceptable mathematical form, spelling, punctuation and grammar.         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.       QWC0. Evident weakness in organisati	4(a) A correct combination with cost.	$\checkmark$	B2	B1 for a correct possible choice with no cost or an
A different combination with cost.       F         A different combination with cost.       F         A different combination with cost.       F         B2       B1 for a different correct cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         Look for       •       \$         • spelling       •       Cost in montext explanations,         • the use of notation (watch for the use of '=', £ being appropriate)       •       QWC2.         • correct units shown       QWC2:       QWC1. Presents relevant material in a coherent and logical manner, but with some errors in spelling, punctuation and grammar.         QWC2:       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.       QWC0. Evident weakness in organisation of material but using acceptable mathematical form, spelling, punctuation and grammar.         QWC1:       Candidates will be expected to       •         • present work clearly, with words explaining process or steps.       •       QWC0. Evident weakness in organisation of material but using acceptable mathematical form, spe		$\checkmark$		Incorrect cost. B1 for an incorrect combination of at least four
A different combination with cost.       Image: B2       B1 for a different correct possible choice with no cost or an incorrect cost. B1 for a different incorrect cost. B1 for a different incorrect cost.         B2       B2       B1 for a different correct possible choice with no cost or an incorrect cost. B1 for a different incorrect cost.         B1 for a different correct cost.       B1 for a different correct cost.         B1 for a different correct cost.       B1 for a different incorrect cost.         B1 for a different correct cost.       B1 for a different incorrect cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         B1 for a different incorrect cost.       B1 for a different incorrect cost.         QWC2.       Creating a mane				containers with a correct cost.
an incorrect cost.         B1 for a different incorrect cost.         Signal Medium Large         Cost         Look for         • spelling         • clarity of text explanations,         • the use of notation (watch for the use of '=', £ being appropriate)         • correct units shown         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.         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.         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.         QWC0: Evident weakness in organisation of material and errors in use of mathematical form, spelling, punctuation and grammar.         QWC1: Candidates will be expected to         • present work clearly, with words explaining process or steps. </td <td>A different combination with cost.</td> <td>./</td> <td>B2</td> <td>B1 for a different correct possible choice with no cost or</td>	A different combination with cost.	./	B2	B1 for a different correct possible choice with no cost or
Look for <ul> <li>spelling</li> <li>clarity of text explanations.</li> <li>the use of notation (watch for the use of '=', £ being appropriate)</li> <li>correct units shown</li> </ul> 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.             QWC2: Candidates will be expected to <ul> <li>present work clearly, with words explaining process or steps.</li> <li>AND</li> <li>make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units in their final answer.</li> <li>QWC1: Candidates will be expected to</li> <li>present work clearly, with words explaining process or steps.</li> <li>MAD</li> <li>make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units in their final answer.</li> </ul> <li>QWC0: Evident weakness in organisation of material and errors in use of mathematical form, spelling, punctuation and grammar.</li> <li>QWC0. Evident weakness in organisation of material and errors in use of mathematical form, spelling, punctuation and grammar.</li> <li>QWC0. Evident weakness in organisation of material and errors in use of mathematical form, spelling, punctuation and grammar and include units in their final answer.</li> <li>QWC0. Evident weakness in organisation of material and errors in use of mathematical form, spelling, punctuation and grammar.</li> <li>QWC0. Evident weakness in organisation of material and errors in use of mathematical form, spelling, punctuation and grammar.</li> <li>Y (Suft) for (165(m<sup>2</sup>)) AND 'Medium box'</li> <li>A1</li>		v √		an incorrect cost.
Look for • spelling • clarity of text explanations, • the use of notation (watch for the use of '=', f being appropriate) • correct units shown 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 and include units in their final answer. QWC1: Candidates will be expected to • present work clearly, with words explaining process or steps. QWC1: Candidates will be expected to • present work clearly, with words explaining process or steps. QWC1: Candidates will be expected to • present work clearly, with words explaining process or steps. QWC1: Candidates will be expected to • present work clearly, with words explaining process or steps. QWC1: Candidates will be expected to • present work clearly, with words explaining process or steps. QWC1: Candidates will be expected to • present work clearly, with words explaining process or steps. QWC1: Candidates will be expected to • present work clearly, with words explaining process or steps. QWC1: Candidates will be expected to • present work clearly, with words explaining process or steps. QR • make few if any mistakes in mathematical form, spelling, punctuation and grammar. $4(b)$ Use of $15 \times 11$ Sight of $165(m^2)$ AND 'Medium box' $4(b)$ Use of $15 \times 11$ Sight of $165(m^2)$ AND 'Medium box' $3(m^2)$ box' or 'f8 box' or 'Medium box', '25(m^2) b				B1 for a different incorrect combination of at least four containers with a correct cost
<ul> <li>Look for         <ul> <li>spelling</li> <li>clarity of text explanations,</li> <li>the use of notation (watch for the use of '=', £ being appropriate)</li> <li>clarity of text explanations,</li> <li>the use of notation (watch for the use of '=', £ being appropriate)</li> <li>correct units shown</li> </ul> </li> <li>QWC2: Candidates will be expected to         <ul> <li>present work clearly, with words explaining process or steps.</li> <li>AND</li> <li>make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units in their final answer.</li> </ul> </li> <li>QWC1: Candidates will be expected to         <ul> <li>present work clearly, with words explaining process or steps.</li> <li>OR</li> <li>make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units in their final answer.</li> </ul> <li>QWC1: Candidates will be expected to         <ul> <li>present work clearly, with words explaining process or steps.</li> <li>OR</li> <li>make few if any mistakes in mathematical form, spelling, punctuation and grammar.</li> </ul> <ul> <li>QWC1: Evident weakness in organisation of material and errors in use of mathematical form, spelling, punctuation and grammar.</li> </ul> <ul> <li>WC2: Evident weakness in organisation of material and errors in use of mathematical form, spelling, punctuation and grammar.</li> <li>WC3: Sight of 165(m<sup>2</sup>) AND 'Medium box'</li> <li>M1</li> <li>Implied by sight of 165(m<sup>2</sup>).</li> <li>Accept '25(m<sup>2</sup>) box' or '18 box' for 'Medium box'. '25(m<sup>2</sup>) box' or '16 box' or 'Medium box'. '25(m<sup>2</sup>) box' or '16 box' or 'Medium box'. '25(m<sup>2</sup>) box' or '16 box' or 'Medium box'. '25(m<sup>2</sup>) box' o</li></ul></li></li></ul>				containers with a correct cost.
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25(m) box' or 't8 box' or 'Medium box' <b>alone</b> is M0A0.	Sight of 165(m <sup>-</sup> ) AND 'Medium box'		A1	Accept '25(m <sup>2</sup> ) box' or '£8 box' for 'Medium box'. '25( $m^2$ ) box' or '£8 box' or 'Medium box'.
				And the box of the box of Medium box alone is MOA0.

JUNE 2014 UNIT 1 Foundation Tier	~	Mark	Comments
5(a) (Charge =) $(\pounds)^2 \times 64 + (\pounds)^{12}$		M1	5C1 5 5(0)1000 (0)100 2(0)
$= (1)^{140}$		AI M1	SCI for an answer of $(\pounds)1292$ or $(\pounds)129.2(0)$
$\frac{205-15}{2}$ of equivalent		A1	
= 95		A1	F.T. 'their 95' $\times$ 10 only if M1 gained.
950(metres)			Trial and improvement should show $\div 10$ , $\times 2$ , $\pm 15$ for M1
Dither montine for $f(a)(i)$ $f(a)(i)$ and $f(b)$			Then A2 C.A.O.
All parts to be viewed with diagram			Use overlay and measuring tools.
6(a)(i) Points A and B in correct position.		B2	B1 for each (ignore labelling).
			Use overlay for tolerance allowance.
(ii) $8 (\pm 0.2) \times 25$		M1	F.T. their AB length $(\pm 0.2 \text{ cm}) \times 25$ .
$= 200 (\pm 5) (m)$		A1	
(b) $132(\pm 4)^{(\circ)}$		B2	B1 for $48(\pm 4)^{(\circ)}$ . F.T. from their diagram.
7. $(\pounds)103 - 5 \times (\pounds)7$	$\checkmark$	M1	
= (£)68	$\checkmark$	A1	
$(\pounds)68 \div 17$	$\checkmark$	M1	F.T. 'their £68'.
$=(\pounds)4$	$\checkmark$	Al	
8. (Time driving = $2hrs 15min + 1hr 45min$ )			
= 4 (hours) or 240(min)	$\checkmark$	B2	B1 for sight of either 2(hrs) 15(min) or 135(min)
	$\checkmark$		OR 1(hr) 45(min) or 105(min)
			<u>Anemative methoa</u> Abours 25min – 25min
			$= 4(hours) \qquad B2$
			B1 for sight of 4(hrs) 25(min) or 265(min).
$(\Lambda y, \text{Speed} =) = 200$		M1	ET their time Do not revealing if they incorrectly note
$(Av. speed -) \frac{200}{4}$	V	1011	'their F T time' (e.g. use 3.3 for 3hrs 30 min)
= 50		A1	A0 if they have incorrectly used 'their F.T. time'.
m.p.h.	V	U1	Independent of other marks. Allow any unambiguous
	v		correct notation.
			200/240 = 0.83(33). m.p.min gains M1,A1,U1.
			200/240 = 0.83(33). m.p.h gains M1,A1,U0.
9 Use of 'Volume = length $\times$ width $\times$ height'		M1	2007240 = 0.03(35) gains M1,A1,00.
(Volume =) $5.5 \times 3.8 \times 0.12$		m1	Allow m1 for $550 \times 380 \times 12$
$= 2 \cdot 5(08 \text{ m}^3)$		A1	C.A.O.
			If 0 marks awarded, SC1 for sight of $0.12$
10. Use overlay		N/1	$\pm 2^{\circ}$ (use overlay). Allow the M marks for dots, crosses or
Position at $135^{\circ}$ from ship A. Position at $215^{\circ}$ from ship B		M1	any unambiguous indication that the correct bearings have
Position marked OR two intersecting lines		A1	E T if at least M1 and two intersecting lines (Lines must
r oshion marked or two merseeing mes.			originate from ship A and ship B respectively)
11. $(\cot 600 \text{ euros} =) \frac{600}{1.29}$	$\checkmark$	M1	
1.28 - (f)//68 75	,	Δ1	
(600  euros bought) 600	<b>√</b>	M1	
1.50	$\checkmark$		
$=(\pounds)400$	$\checkmark$	A1	
(Keith lost ) (£)68.75	$\checkmark$	A1	F.T. their amounts. Dependent on <b>both</b> M1.

JUNE 2014 UNIT 1 Foundation Tier	~	Mark	Comments
<ul><li>12. Three different valid comments.</li><li>e.g. 'Not representative of population'</li></ul>	<b>&gt; &gt; &gt;</b>	В3	<i>Ignore irrelevant statements.</i> B1 for each different valid comment. Accept equivalent statements e.g. 'biased' (by gender or interest group). Do not give more than one mark for similar criticism(s).Reference to location should only be credited once.
'Not relevant to the hypothesis being tested' 'Personal' 'Gender not asked'			( criticisms of question (i))
'Does not specify over what period of time', 'Can tick one of two boxes if answer is 3'			( criticisms of question (ii))
'People might forget to bring them' 'Might be different people at the next meeting'			( criticisms of the method of collection)
13. 35.5		B2	B1 for 35·4(924)
Ribbon marking for 14(a) and 14(b).			
14. (a) $500 + 500 \times \frac{2}{5}$ or equivalent	$\checkmark$	M1	Allow M1A0 for '200'. Allow M1A1 for '200 extra'.
= 700	$\checkmark$	A1	M1A1 implied by sight of 1100 (or 1300).
Two further correct steps.	1	M1	Ignore continuing to an additional year.
(Number of workers =) $1372$		A1	C.A.O. Mark final answer.
	v		<u>Alternative method.</u>
			$500 \times (1.4)^{2}$ M2 - 1272 A2
			$= 15/2 \qquad A2$
			$500 \times (1.4)^4$ M2
			= 1920.8 (or 1921) A1
(b) $(1372 - 500 =) 872$		B1	F.T. 'their 1372'.
872 / 500 × 100		M1	FT 'their 1372 – 500'
= 174(.4%)		A1	If no marks gained then allow
			SC1 for an answer of $274(.4\%)$ or equivalent on F.T.

### **UNIT 1 - HIGHER TIER**

June 2014 UNIT 1 Higher Tier	~	Mark	Comments
<ol> <li>Three different valid comments.</li> <li>e.g. 'Not representative of population'</li> </ol>	$\checkmark$	В3	<i>Ignore irrelevant statements.</i> B1 for each different valid comment. Accept equivalent statements e.g. 'biased' (by gender or interest group). Do not give more than one mark for similar criticism(s).Reference to location should only be credited once.
'Not relevant to the hypothesis being tested' 'Personal' 'Gender not asked' 'Does not specify over what period of time',			( criticisms of question (i)) ( criticisms of question (ii))
'Can tick one of two boxes if answer is 3' 'People might forget to bring them' 'Might be different people at the next meeting'			( criticisms of the method of collection)
2. Use overlay Position at 135° from ship A. Position at 215° from ship B. Position marked OR two intersecting lines.		M1 M1 A1	<ul> <li>± 2° (use overlay). Allow the M marks for dots, crosses or any unambiguous indication that the correct bearings have been offered.</li> <li>F.T. if at least M1 and two intersecting lines. (Lines must originate from ship A and ship B respectively)</li> </ul>
3. (Salary received) $(\pounds)30000 \times 0.7$ = $(\pounds)21000$ (Cost of petrol) $\frac{8000}{40} \times (\pounds)6.25$ = $(\pounds)1250$	$\checkmark$	M1 A1 M1 A1	
(New salary received) $= (\pounds)14000$	$\checkmark$	B1	Or F.T. 2/3 × 'their 21000'.
$(Loss) (\pounds) 21000 - (\pounds) 1250 - (\pounds) 14000$ = (\pounds) 5750	$\checkmark$	M1 A1	F.T. their <u>three stated</u> values. (Look for '19750 – 14000' or '21000 – 15250')
<ul> <li>Look for <ul> <li>spelling</li> <li>clarity of text explanations,</li> <li>the use of notation (watch for the appropriate use of '=' and operators)</li> <li>'£' shown where appropriate.</li> </ul> </li> <li>QWC2: Candidates will be expected to <ul> <li>present work clearly, with words explaining process or steps</li> </ul> </li> <li>AND <ul> <li>make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units in their final answer</li> </ul> </li> <li>QWC1: Candidates will be expected to <ul> <li>present work clearly, with words explaining process or steps</li> </ul> </li> <li>OR <ul> <li>make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units in their final answer</li> </ul> </li> </ul>		QWC 2	<ul> <li>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.</li> <li>QWC1. Presents relevant material in a coherent and logical manner, but with some errors in use of mathematical form, spelling, punctuation or grammar. OR</li> <li>Evident weakness in organisation of material but using acceptable mathematical form, and with few if any errors in spelling, punctuation and grammar.</li> <li>QWC0. Evident weakness in organisation of material and errors in use of mathematical form, spelling, punctuation and grammar.</li> </ul>

June 2014 UNIT 1 Higher Tier	✓	Mark	Comments
4. $(\cot 600 \text{ euros} =) \frac{600}{2}$	$\checkmark$	M1	
1.28		. 1	
= (t)408./5 (600 euros bought) 600	$\checkmark$	AI M1	
1.50	~		
$=(\pounds)400$	$\checkmark$	A1	
(Keith lost ) (£)68.75	$\checkmark$	Al	F.T. their amounts. Dependent on <b>both</b> M1.
5. 35.5		B2	B1 for 35.4(924)
<b>Ribbon marking for 6(a) and 6(b).</b> 6 (a) $500 \pm 500 \times \frac{2}{r}$ or equivalent		M1	Allow M1A0 for '200' Allow M1A1 for '200 extra'
= 700	v v	A1	M1A1 implied by sight of 1100 (or 1300).
	·		
Two further correct steps. (Number of workers $=$ ) 1272	$\checkmark$	M1	Ignore continuing to an additional year.
(Number of workers =) 1572	$\checkmark$	AI	Alternative method
			$\frac{1}{500 \times (1.4)^3} M2$
			= 1372 A2
			Allow 500 (14) <sup>4</sup>
			$500 \times (1.4)^{\circ} \qquad M2 \\ - 1020.8 (or 1021) \qquad A1$
			- 1720 <sup>-0</sup> (01 1721) MI
(b) $(1372 - 500 =) 872$		B1	F.T. 'their 1372'.
872 / 500 × 100		M1	FT 'their 1372 – 500'
= 174(.4%)		Al	If no marks gained then allow $SC1$ for an answer of $274(-49)$ or equivalent on E.T.
7 (a) Appropriate uniform scale on vertical axis		B1	SCI for all answer of $2/4(.4\%)$ or equivalent on F.1. Must allow for all plots up to ( $f6000, f1100$ )
		DI	Need not start at 0. Allow 'steps of £1000'.
Line starts at (0, 500).		B1	Accept plot at (0,500) if no line drawn.
Straight line with correct gradient (£100 per £1000).		B1	
(.(b) A comment that states that it may appear that reported crime has decreased because the		<b>B</b> 2	Accept any wording that suggests this. B1 if only refers to the misunderstanding
axes are not perpendicular.			B1 if only refers to the reason.
8. Sight of $8.5$ (litres) or equivalent	$\checkmark$	B1	
Sight of $\frac{7 \times 24}{5}$	$\checkmark$	M1	Allow for $(7 \times 24)$ / an attempt at time difference.
× 8.5		m1	F T 'their 8.5' (including use of 8)
= 285.6 (litres)	✓ ✓	A1	<u>C.A.O.</u>
	×		Allow 286 (litres) or 285 (litres) from correct working.
<b>Ribbon marking for 9(a) and 9(b).</b> (x) = (y) + (y)		M1	
= 523.6 (cm <sup>3</sup> ) or 500 $\pi$		A1	Accept 523 to 524 inclusive.
3			
(b) (Volume of cylinder) $\pi \times 5.5^2 \times 63$	./	M1	
$= 5987 \cdot 1(\text{cm}^3)$	$\checkmark$	Al	Accept 5984 to 5989.5 inclusive.
(Empty space for cyl.) $2 \times 5987 \cdot 1 - 12 \times 523 \cdot 6$	$\checkmark$	M1	F.T. their derived volumes only if more than one cylinder
	$\checkmark$	A 1	required.
$= 5691(\text{cm}^3)$ (Empty space for key) 42 × 22 × 11 = 12 × 522 ¢	<ul> <li>✓</li> </ul>	Al M1	E T their volume for a sphere
(Empty space for box) $42 \times 32 \times 11 - 12 \times 525 \cdot 6$ = $8500(\cdot 8_{\odot})(\text{cm}^3)$	<b>√</b>	Al	
10. Use of $R = 6$ AND $N = 3$	1	B1	
$\left[\left(1+\frac{6}{100\times 2}\right)^3-1\right]\times 100$		M1	Allow FT for $N = 4$ only.
(AER = ) 6.12 (%)		A1	N = 4 leads to an answer of 6.14 (%)
· / · · · (/ · /	1	1	

June 2014 UNIT 1 Higher Tier	~	Mark	Comments
11. (Distance) $30 \times \frac{1}{3} + 45 \times \frac{1}{3} + 60 \times \frac{1}{3}$	$\checkmark$	M1	
= 45 (miles)	$\checkmark$	A1	Note: 45 minutes is M0A0.
(Time) $15/30 + 15/45 + 15/60$ = $1^{1/}_{12}$ (hr) or 65(min) or equivalent. ISW	✓ ✓	M1 A1	May be implied. F.T. 'one third of their distance'.
Ribbon marking for 12(a) and 12(b).			
12(a) Sight of (arc length =) $10.8(m)$	$\checkmark$	B1	
Use of AÔB /360 × 2 × $\pi$ × 8 · 6 = 10 · 8	$\checkmark$	M1	F.T. 'their arc length' (including use of 28).
$\hat{AOB} = \underline{10.8 \times 360}$	$\checkmark$	m1	
$2 \times \pi \times 8.6$ = 71.9() or 72 <sup>(°)</sup>	✓	A1	
(b) (Area =) $72/360 \times \pi \times 8.6^2$		M1	ET 'their 72°'
$= 46.4() (m^2)$		A1	Accept $46.4$ to $46.5$ inclusive.
13. (Total volume =) $h^3 + \frac{1}{3} \times \pi \times r^2 \times 4h$	$\checkmark$	B1	Radius 'r' may be shown as 'h'.
$h^{3} + \frac{1}{3} \times \pi \times r^{2} \times 4h = 648.6$ $h^{3} + \frac{1}{3} \times \pi \times h^{2} \times 4h = 648.6$	✓ ✓	M1 m1	F.T. $h^3$ + 'their cone volume'.
$h^3 = 125$	$\checkmark$	A1	<u>C.A.O.</u>
h = 5(cm)	$\checkmark$	A1	F.T. 'their h <sup>3</sup> ' if M1 gained
H = 25 (cm)	$\checkmark$	B1	F.T. $5 \times$ 'their derived h'.

## **UNIT 2 - FOUNDATION TIER**

June 2014 UNIT 2 (non calculator) Foundation Tier	~	Mark	Comments
1. (a) (i) 328		B1	
1. (a) (ii) 388		B1	
1. (b) (i) 33, 54		B1	
1.(b) (ii) 18		B1	
1. (b) (iii) 42		B1	
1. (b) (iv) 36		B1	
1. (c) 23689		B1	
1. (d) 5000		B1	
1.(e) 4 thousand(s), 4000		B1	Accept thousand(s). B0 for 1000.
2. chord radius tangent		B1 B1 B1	
3. (a) unlikely		B1	
3. (b) an even chance		B1	
4. Use overlay		B2	Use overlay B1 for all 4 squares and one extra OR B1 for 2 or 3 correct squares and no incorrect squares
5. (a) 11 <i>h</i>		B1	Accept $11 \times h$
<ul><li>5. (b) (i) (5, 7) plotted correctly</li><li>(ii) line y = 4 drawn correctly</li></ul>		B1 B1	At least 3 squares long

June 2014 Unit 2 (non calculator) Foundation Tier	~	Mark	Comments
6. (a)An <u>attempt</u> to find values that can be directly compared.		M1	All %, OR all fractions with common denominator, OR all decimals, OR a valid combination e.g. Zac $3/5 = 60\% = 0.6$
Finding (Zac) $60/100(oe)$ (Josh) $62/100$ (oe) (Lowri) $58/100$ (oe) OR (Zac) $60\%$ (Josh) $62\%$ (Lowri) $58\%$ OR (Zac) $0.6$ (Josh) $0.62$ (Lowri) $0.58$ OR (Zac) $3/5 = 60\% = 0.6$		A1	All fractions must have the same denominator
Most: Josh AND least: Lowri		A1	If only one error made, then FT. SC1 if most: Josh, AND least: Lowri with no supporting work.
6. (b) (48 ÷ 6 =) 8 (8 + 9 =) 17		B1 B1	FT their 8 $ \begin{array}{c} Alternative: \\ 6n - 54 = 48 \\ 6n = 102  B1 \\ n = 17  B1  FT \text{ 'their 102'} \end{array} $
6. (c) (i) 45		B1	Accept embedded answer
6. (c) (ii) 13		B1	Accept embedded answer
6. (d) 4 - 6		B1 B1	FT 'their 4' – 10 provided 'their 4' < 10

June 2014 Unit 2 (non calculator) Foundation Tier	~	Mark	Comments
7. $(2 \times \text{adult one-day tickets } 2 \times \text{\pounds}21.50 = \text{\pounds}) 43$ AND $(2 \times \text{child one-day tickets } 2 \times \text{\pounds}17.50 = \text{\pounds}) 35$	~	B1	Accept a sight of 78
$(2 \times 6 \text{ adult individual rides } 2 \times 6 \times \text{\pounds}2.50 = \text{\pounds}) 30$ $(2 \times 8 \text{ child individual rides } 2 \times 8 \times \text{\pounds}2.50 = \text{\pounds}) 40$	* *	B1 B1	Accept sight of 70 for 2 <sup>nd</sup> and 3 <sup>rd</sup> B1s.
(Tickets are )2 child one-day tickets and 12 (adult) individual ride tickets (Cost = $\pounds 30 + 35 = \pounds$ ) 65	* *	B1 B1	May be implied by answer of 65. FT their prices for the cheapest option. SC1 B0 if sight of (£)78 and (£)70 AND conclusion to buy individual ride tickets
			Alternative: (adult individual rides $6 \times (\pounds)2.50 = )$ 15 (or $\times 2 = )$ 30 B1 (child individual rides $8 \times (\pounds)2.50 = )$ 20 (or $\times 2 = )$ 40 B1 Adult: indication that 15<21.50 or <b>30</b> <43 AND used B1 Child: indication that 17.50<20 or <b>35</b> <40 AND used B1 (Cost = \pounds)65 B1
<ul> <li>Look for</li> <li>relevance of work shown</li> <li>generally correct spelling</li> <li>clarity of text explanation</li> <li>use of notation (appropriate use of '=', '×', '+', f)</li> <li>QWC2: Candidates will be expected to</li> <li>present work clearly, with words explaining process or steps</li> <li>AND</li> <li>make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units in their working</li> <li>QWC1: Candidates will be expected to</li> <li>present work clearly, with words explaining process or steps</li> <li>OR</li> <li>make few if any mistakes in mathematical form, spelling, punctuation and grammar, and include units in their working.</li> </ul>		QWC2	<ul> <li>QWC2 Presents relevant material in a coherent and logical manner, using acceptable mathematical form, and with few if any spelling, punctuation and grammar.</li> <li>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.</li> <li>QWC0 Evident weaknesses in organisation of material, and errors in use of mathematical form, spelling, punctuation or grammar.</li> <li><u>A final unsupported statement is QWC0</u></li> </ul>
			A final unsupported statement is QWC0

June 2014 Unit 2 (non calculator) Foundation Tier	~	Mark	Comments
8. 7/10 + 2/10 or equivalent 9/10 or equivalent 1/10		M1 A1 B1	Fractions must have a common denominator FT 'their derived 9/10' Alternative – using a length: Finding 7/10 and 1/5 of a length AND adding them M1 Correct answer to addition A1 Final answer of 1/10 B1
<ul> <li>9. Use overlay</li> <li>2 rectangles 6cm by 3cm</li> <li>1 rectangle 6cm by 4cm</li> <li>2 rectangles 4cm by 3cm</li> <li>Makes a correct net</li> </ul>		B1 B1 B1 B1	Use overlay (± 2mm) To gain each B1, each pair of rectangles must not be disjointed Penalise – 1 only, if height of 1 cm used.
10. Ribbon marking for 10(a) and (b)         (a)       13       23       33         17       31       45         21       39       57		B2	B1 for 4 correct entries
(b) 4/9		B2	<ul> <li>FT their table.</li> <li>B1 for a numerator of 4 in a fraction less than 1.</li> <li>B1 for a denominator of 9 in a fraction less than 1.</li> <li>Do not penalise incorrect reduction of fractions from a FT.</li> <li>NB Penalise -1 for use of words such as '4 out of 9', '4 in 9'. or '4:9'.</li> <li>When both fraction and wrong notation seen, DO NOT penalise wrong notation.</li> </ul>
11. Use overlay Correct enlargement in correct position		B2	<b>Use overlay</b> B1 for any 2 correct vertices OR for correct enlarged shape in incorrect position OR for wrong scale factor consistently used.
12. Ribbon marking for 12(a) and (b) (a) $0.15 \times (\pounds)480$ or equivalent OR an attempt to calculate $24 \times (\pounds)22$ (Total cost = ) $0.15 \times (\pounds)480 + 24 \times (\pounds)22$ or		M1	Valid method for finding either 15% of (£)480 OR 24 × (£)22 (implied by sight of (£)72 or (£) 528 respectively) A complete correct method
equivalent $(\pounds72 + \pounds528 =)$ (\pounds)600		A1	CAO
(b) (Difference in price =) $(\pounds)600 - (\pounds)480$ OR $(\pounds)120$ (Percentage increase =) $120/480 \times 100\%$ or equivalent $25\%$		B1 M1 A1	Attempt to find difference in price. FT 'their (a)' A complete correct method $OR \ 600/480 \times 100(\%) \ (= 125\%) \ B1$ $600/480 \times 100(\%) - 100(\%) \ M1$ $25(\%) \ A1$

June 2014 Unit 2 (non calculator) Foundation Tier	~	Mark	Comments
13. $3x + 20 = 6x - 25$ OR (BCD=)180 - $(3x + 20) = 180 - (6x - 25)$	~	M1	Strategy of equating opposite angles or other equivalent equations
3x = 45 (or $-3x = -45$ )	$\checkmark$	A1	CAO
(x =) 15	$\checkmark$	A1	FT their $kx = a$ , where $k \neq 1$
			Alternative: A trial and improvement method
			with an attempted first trial (for both relevant
			Two appropriate trials completed (both angles) A1
			(x =) 15  CAO A1
65 (°) seen or implied		B1	FT 'their 15' i.e. correct substitution in either
	~		expression
(Angle BCD =) $115(^{\circ})$	1	B1	FT 180 – 'their 65', but not 180 – 'their 15'
	•		
14. $-x < 7 - 3$ OR $3 - 7 < x$ OR equivalent		M1	Accept $-3 + x > -7$ as a valid first step.
x > -4  OR  -4 < x		A1	Mark final answer.
			Solving an equation gets MOA0 unless the 'equals' sign is correctly replaced by an inequality
			sign.
15. To be viewed with diagram			$OR \frac{2}{3} \times \frac{9}{10} M1$
$(1/10 \times 360(^\circ)) = 36(^\circ)$ seen or implied	$\checkmark$	B1	6/10 or equivalent A1
$360(^{\circ}) - 1/10 \times 360(^{\circ}) (=324(^{\circ}))$	$\checkmark$	B1	$6/10 \times 360(°)$ M1
$2/3 \times 324(^{\circ})$ OR at least two appropriate trials to split	$\checkmark$	M1	FT 'their derived $324(^{\circ})$ $216(^{\circ})$ A1
324 into 2 parts, one being twice the other		A 1	<i>FT 'their 6/10'</i>
216(°)	$\checkmark$	AI	CAO
			Award B1B1SC1 or M1A1SC1 for a final answer
			of 108(°) if 'red' and 'yellow' have clearly been
			reversed

#### **UNIT 2 - HIGHER TIER**

June 2014 UNIT 2 Higher Tier	~	Mark	Comments
1. <u>To be viewed with diagram</u> Reflection (in the line with equation) $x = 1$		B1 B1	Check diagram for line <u>with</u> its equation $x = 1$
<ul> <li><u>Ribbon-marking for parts (a) and (b)</u></li> <li>(a) 0•15 × (£)480 or equivalent OR an attempt to calculate 24 × (£)22</li> </ul>	~	M1	Valid method for finding either 15% of $(\pounds)480$ OR $24 \times (\pounds)22$ (implied by sight of $(\pounds)72$ or $(\pounds)$ 528 respectively)
(Total cost = ) $0.15 \times (\pounds)480 + 24 \times (\pounds)22$ or equivalent $(\pounds72 + \pounds528 =) (\pounds)600$ Look for	$\checkmark$	M1 A1	A complete correct method CAO
<ul> <li>relevance</li> <li>spelling in at least 1 statement/sentence</li> <li>clarity of text explanations,</li> <li>the use of notation (watch for the use of '=' f %)</li> </ul>			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.
<ul> <li>QWC: Candidates would be expected to</li> <li>clearly show how they arrived at their solution</li> <li>have few errors in mathematical form, spelling, punctuation and grammar</li> </ul>	✓ ✓	Q W C 2	<ul> <li>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.</li> </ul>
Count incorrect use of '=' in situations such as ' $24 \times (\pounds)22 = 528 + 72$ ' within the 'few errors in mathematical form'			QWC0 Evident weaknesses in organisation of material, and errors in use of mathematical form, spelling, punctuation or grammar.
QWC2: Candidates will be expected to • present work clearly, with words explaining process or steps			A final unsupported statement only gets QWC0
<ul> <li>make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units (£) in their final answer</li> </ul>			
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 and include units (£) in their final answer			
<ul> <li>(b) (Difference in price =) (£)600 - (£)480 OR (£)120</li> <li>(Percentage increase =) 120/480 × 100(%) or equivalent 25(%)</li> </ul>		B1 M1 A1	Attempt to find difference in price. FT 'their (a)' A complete correct method $OR \ 600/480 \times 100(\%) \ (= 125\%) \ B1$ $600/480 \times 100(\%) - 100(\%) \ M1$ $25(\%) \ A1$
3. <u>Overlay required</u> Correct enlargement in correct position		B2	B1 for any 2 correct vertices OR for correct enlarged shape in incorrect position OR wrong scale factor consistently used
4. To be viewed with diagram 3x + 20 = 6x - 25 OR (BCD =) $180 - (3x + 20) = 180 - (6x - 25)$	~	M1	Strategy of equating opposite angles or other equivalent equations OR a trial and improvement method with an attempted first trial (for both relevant angles) OR two appropriate trials completed (both angles)
3x = 45 (or $-3x = -45$ ) (x =) 15 65(°) seen or implied (Angle BCD =) 115(°)	$\begin{array}{c} \checkmark \\ \checkmark \\ \checkmark \\ \checkmark \\ \checkmark \end{array}$	A1 A1 B1 B1	CAO FT their $kx = a$ , where $k \neq 1$ FT 'their 15'. i.e. correct substitution in either expression. FT 180 - 'their 65°', but not 180 – 'their 15'

June 2014 UNIT 2 Higher Tier	✓	Mark	Comments
5. Method that produces at least 2 correct prime factors Sight of correct factors (2, 3, 3, 7) in any order $2 \times 3^2 \times 7$		M1 A1 B1	FT until 2 <sup>nd</sup> error Ignore 1s seen FT their factors (with at least 1 index >1 used). Do not ignore 1s within the product. B0 for a sum or list.
6. $-x < 7-3$ OR $3-7 < x$ or equivalent x > -4 OR $-4 < x$		M1 A1	Accept $-3 + x > -7$ as a valid first step Mark final answer. Solving an equation gets M0A0 unless the 'equals' sign is correctly replaced by an inequality sign.
<ul> <li>To be viewed with diagram <ul> <li>(1/10 × 360(°) = ) 36(°) seen or implied</li> <li>360(°) - 1/10 × 360(°) (= 324(°))</li> <li>2/3 × 324(°) OR at least two appropriate trials to split</li> <li>324 into 2 parts, one being twice the other</li> <li>216(°)</li> </ul> </li> </ul>		B1 B1 M1 A1	$\begin{array}{c} OR \ 2/3 \times 9/10  M1 \\ 6/10 \ or \ equivalent  A1 \\ FT \ 2/3 \ of \ `their \ derived \ 324' \qquad 6/10 \times 360(^\circ)  M1 \\ 216(^\circ)  A1 \\ CAO \qquad FT \ `their \ 6/10' \\ Award \ B1B1SC1 \ or \ M1A1SC1 \ for \ a \ final \ answer \ of \ 108(^\circ) \ if \\ `red' \ and `yellow' \ have \ clearly \ been \ reversed. \end{array}$
8. <b><u>Ribbon-marking for parts (a) and (b)</u></b> (a) $4n + 4$ OR $(n + 2)^2 - n^2$ or equivalent		B3	B2 for $4n + \dots$ OR $n + 2^2 - n^2$ (brackets missing) B1 for sight of 8, 12, 16, 20 (check diagrams) $n + 4$ OR $n^2 + 4 - n^2$ gets B0 If B3 awarded, penalise – 1 for subsequent incorrect working
(b) $4n + 4 = 164$ OR appropriate inverse operations n = 40 (number of white tiles =) 1600		B1 B1 B1	Setting up appropriate equation. FT their expression. FT their equation (for equivalent difficulty). FT their integer <i>n</i> .
<ul> <li>9. 2a + 3c = 31.60, a + 2c = 18.60 (or equivalent in pence) Method to find the first variable</li> <li>Correct first variable</li> <li>Correct second variable</li> </ul>		S1 M1 A1 A1	Strategy of forming a pair of equations. (Do not penalise for not defining variables.) Allow one slip (but not in equated variable). FT 'their equations' (provided equivalent difficulty) FT their first variable $a = (\pounds) 7.4(0), c = (\pounds) 5.6(0)$ (or equivalent in pence) Award 0 marks for an unsupported answer
10. $(6 \times 10^{6}) \times 4$ (×) 'their $(6 \times 10^{6}) \times 4' \times 1000$ $2 \cdot 4 \times 10^{10}$ OR $2 \cdot 388 \times 10^{10}$ OR $2 \cdot 412 \times 10^{10}$		M1 M1 A1	At least one number must be rounded. Must be within a product. Metric conversion. Allow unrounded numbers.
11. Overlay required Sight of line for either $x = -2$ or $y = 1$ Correct line drawn for $x + 2y = 4$ Correct region clearly identified		B1 B2 B1	Accept an unlabelled correct line provided unambiguous. Accept dotted lines throughout question. B1 for correct gradient (= -1/2) OR correct <i>y</i> -intercept plotted (0, 2) OR correct <i>x</i> -intercept plotted (4, 0) OR any two other points calculated or plotted correctly (with no incorrect points) FT for their lines (for equivalent difficulty)
12. (a) $2c^2 - 5c + 6c - 15$ $2c^2 + c - 15$		B1 B1	FT until 2 <sup>nd</sup> error (and equivalent difficulty) Mark final answer.
(b) Sight of $w^2 + x^2 = 4$ $w^2 = 4 - x^2$ $w = (\pm)\sqrt{(4 - x^2)}$ or $(\pm) 2\sqrt{(1 - x^2/4)}$		B1 B1 B1	FT until 2 <sup>nd</sup> error (for equivalent difficulty) Accept a correct alternative approach e.g. $w^2/4 = 1 - x^2/4$ Isolating $w^2$ Square root must clearly be over complete expression (or correct use of brackets is required). Do not ISW e.g. $(\pm)\sqrt{(4-x^2)} = 2 - x$ gets B0

June 2014 UNIT 2 Higher Tion	✓	Mark	Comments
Thigher Tree         13.       Ribbon-marking required for parts (a) to (d)         To be viewed with diagram       (a) 38(°)         (b) 71(°)       (c) 109(°)         (d) 76(°)       (c)		B1 B1 B1 B1	FT (180 – 'their a')/2' FT 180 – 'their b' FT 2 × 'their a'
14. (a) $x = 0.36666$ $10x = 3.6666$ with an attempt to subtract $33/90 \ (=11/30)$ or $363/990$ or equivalent		M1 A1	Or 10 <i>x</i> and 100 <i>x</i> , or equivalent. Or an alternative method. CAO (3·3/9 gets M1 A0)
(b) 2/3		B2	B1 for $(3/2)^{-1}$ or $1/(3/2)$ or $1/1.5$ or $(8/27)^{1/3}$ or $(_3\sqrt{8}/_3\sqrt{27})_{\text{or } 3}\sqrt{(8/27)}$ B0 for $8/27^{1/3}$ or $8^{1/3}/27$
(c) $5\sqrt{3} + 3 - 5\sqrt{3} + 2 \times 3$ = 9		B1 B1	FT from one incorrect term
15. (a) 3/8 × 2/7 6/56 (= 3/28)		M1 A1	Do not ignore incorrect cancelling $OR$ two-way table drawn, with $8 \times 8 - 8$ spaces M1 6/56 (= 3/28) A1 If M0A0, award SC1 for method (with replacement)
			$(3/8 \times 3/8 =) 9/64$
(b) $1 - P(7 \text{ and } 8)$ $1/8 \times 1/7 + 1/8 \times 1/7 \text{ OR } 2 \times 1/8 \times 1/7$ (1 - 2/56 =) 54/56 (= 27/28)		S1 M1 A1	Award even if 7,8 and 8,7 are not both considered Must have considered both 7,8 and 8,7 Do not ignore incorrect cancelling $OR$ two-way table drawn, with $8 \times 8 - 8$ spaces M1 1 - P(7  and  8) = S1
			(1 - 2/56 =) 54/56 (= 27/28)  A1 If M0A0, award SC1 for method 'with replacement' $(1 - 2 \times 1/8 \times 1/8 - 1/8 \times 1/8 =) 61/64$
<ul><li>16. Translation horizontally to the right (8, 0) indicated correctly on the <i>x</i>-axis with the correct translation.</li></ul>		B1 B1	Accept labelling of 8 on the <i>x</i> -axis. SC1 for left shift with (-2, 0) or -2 indicated on the <i>x</i> -axis.

## **UNIT 3 - FOUNDATION TIER**

June 2014 UNIT 3 (calculator allowed) Foundation Tier	~	Mark	Comments
1. Ribbon marking for 1(a) and 1(b)		D1	
(a) $(\pm)96$	<b>v</b>	BI	
(t)34.2(0)	<b>v</b>	BI D1	
(L)14.0(0) Total = 96 + 34 2(0) + 14 8(0)-(f)145	<b>v</b>	DI B1	FT candidate's values
10tal = 90 + 34.2(0) + 14.0(0) - (2)143	~	DI	r'i candidate s values.
(b) $0.05 \times (\pounds)145$ or equivalent		M1	FT 'their total'.
(£) 7.25		A1	(£) 152.25 gets M1 A1
		6	
2. (a) 457.8		B1	
		1	
2. (b) 458		B1	
		1	
2. (c) 500		B1	
2 14		1	
3. 14		B2	B1 for sight of 32 or $(-)$ 18
$(A, (a) \mathbf{E})$ (is congruent to $\mathbf{A}$ )		2 <b>B</b> 1	
4. (a) E (is congruent to A)		DI DI	
4. (c) C (has half the area of shape E)		B1	
4. (c) C (has han the area of shape E)		DI	
<b>Ribbon marking for <math>4(d)(i)</math> and <math>4(d)(i)</math></b>		D1	
4. (d) (1) 12 (CM) (ii) D (has the same parimeter as share $\mathbf{E}$ )		BI D1	
(II)D (has the same permeter as shape F)		5	
5. Ribbon marking for 5(a) and 5(b)		5	
(a)Yellow = $4$		B1	
Blue = 6 and Green = 6		B1	FT their yellow provided whole number
(b) Both axes labelled, eg Frequency or number	1	B2	
along vertical axis, Red, Yellow, Blue, Green	1		Or suitable code e.g. R, Y, B, G.
along horizontal axis <b>and</b> uniform scale for			
frequency axis starting at 0.			
Free hans of a surrout heights and a surely 111	<ul> <li>✓</li> </ul>	<b>D</b> 2	ET their table sectors
Four bars at correct heights and equal widths.	<ul> <li>✓</li> </ul>	<b>B</b> 2	F.I. their table values.
		6	BI for any 2 or 3 correct bars on F.1.
		0	

June 2014 UNIT 3 (calculator allowed)	✓	Mark	Comments
Foundation Tier			1500 00
6. (number of packets=)( $\pm$ )15 ÷ 0.89	✓	MI	1500 ÷ 89
(-10.655952) 16 (nackets can be purchased)		A1	or appropriate method.
$(\text{Change}=)(\pounds)15 - 16 \times (\pounds) 0.89 \text{ or}$	✓ ✓	M1	FT number of packets of biscuits
1500(p)-16×89(p)	•		I
(£)0.76 or 76(p)	$\checkmark$	A1	A0 for £76 or $0.76p$
Look for			
• Spelling		OWC	QWC2 Presents relevant material in a coherent
• Clarity of text explanations,	✓ ✓	$2^{\text{QWC}}$	mathematical form, and with few if any errors in
• Consistent use of £ or p signs.			spelling, punctuation and grammar.
QWC2: Candidates will be expected to			
• Present work clearly, with words			
explaining process and steps			QWC1 Presents relevant material in a coherent
AND			and logical manner but with some errors in use
• Make few, if any, mistakes in			of mathematical form, spelling, punctuation or
mathematical form, spelling, punctuation			grammar.
and grammar in their final answer.			Evident weakness in organisation of material but
QwC1 : Candidates will be expected to			using acceptable mathematical form, with few,
• Present work clearly, with words			if any, errors in spelling, punctuation and
explaining process or steps			grammar.
OK			QWC0 Evident weakness in organisation of
• Make few, if any, mistakes in			form spelling punctuation and grammar
and grammer in their final answer			form, spennig, punctuation and grammar.
and grammar in their rinar answer.		6	
7. Circle with AB as diameter		B1	Intention of circle accepted.
		1 M1	M0 A0 fr. 42 20-2
8. (a) (1) identify warmest and coldest $(42^{\circ}\text{C} \text{ and } -39^{\circ}\text{C})$ and intention to subtract		MII	MU AU IOF $42-39=3$ M1 A0 for $-39-42=81$
(42  C and  33  C) and intention to subtract. 81 (°C)		A1	M1A0 for $4239 = 3$
8. (a) (ii) order data $(-39, -5, 0, 1, 11, 11, 42)$		M1	Allow M1 for data ordered with one omitted.
(median) 1 (°C)		A1	CAO
		4	
8. 8b(i) and 8b(ii) ribbon marked			
<b>8b(1) to be viewed with table below</b>	✓ ✓	MI m1	For an attempt to add the numbers
Sum/12	•	1111	For a division by 12. F1 one sip. (1+4+2+7+11+16+17+21+19+10+7+11)/12 gets
Sun 12			M1 m1
	✓	A1	CAO
(mean=) 10.5 (°C)	✓	B1	
(range = 21 - 1 =) 20		DO	
(ii) A correct statement in context involving		B2	BI for a numerical comparison of mean and
meanand range with interpretation			or range
		6	

June 2014 UNIT 3 (calculator allowed) Foundation Tier	✓	Mark	Comments
9. Use overlay (a) Angle $\hat{V}Y = 08^{\circ}$		B1	Allow $+ 2^{\circ}$
(a) Angle $X\hat{Y} = 40^{\circ}$		B1	Allow $\pm 2^{\circ}$
Aligie $XIZ = 40$ Completed triangle		B1	Only if at least one angle correct.
Completed triangle			Complete reflection of the triangle gets B2
		3	
<ul><li>9. Use overlay</li><li>(b) Appropriate arcs above and below the given line with perpendicular bisector correctly constructed.</li></ul>		B2	B1 for at least two correct arcs.
		2 D1	
10. Finding A: $A=9$	✓	BI	
Finding B: $2B=14$ B=7 Finding C: $C+8=9+7+3$ or equivalent C=11	* * * * *	B1 B1 B1 B1 5	Seen or implied. Correct answer need not be on written on answer line. Seen or implied. F.T their <i>A</i> and <i>B</i>
$\begin{array}{c} 11.25 \times 24 \times 20 \text{ (cm}^{3}\text{) OR } 25 \times 24 \times 20 \div 1000 \text{ (litres)} \\ \div 1500 \text{ (cm}^{3}\text{)} & \div 1.5 \text{(litres)} \\ 8 \text{ (jugs)} \end{array}$		M1 m1 A1 3	Or correct volume in units. Consistent units CAO
12. (a) $3x = 21$ x = 7		B1 B1	FT ax=b if a $\neq$ 1.B0 for $\frac{21}{3}$ or if b is a multiple of a
		2	and fraction not simplified on FT.
12. (b) $75 = \frac{1}{2} \times 50 + 5 \times R$ $75 - 25 = 5 \times R$ R = 10		B1 B1 B1 3	Correct substitution. Isolating R term FT aR=b if $a \neq 1$ Accept embedded answer.
13.			Alternative mark scheme- Monthly cost
(Annual cost of units) 15000×4.028(p) 60420(p) or (£)604.2(0)	✓ ✓	M1 A1	(Monthly cost of units=)15000÷12×4.028(p) (£)50.35 or 5035(p)
(Fixed charge per year $\pounds 6.98 \times 12 =$ ) ( $\pounds$ )83.76	~	B1	(Monthly discount=)( $48 \div 12$ =)(£)4
(cost of units + fixed charge per year $-48$ ) $\div 12$	~	M1	$(\pounds)604.2(0) \div 12 + 6.98 - 4.$ (= $\pounds 50.35 + 6.98 - 4$ )
$(\pounds 639.96 \div 12 \text{ or } 63996 \div 12)$ (Monthly payment=) (£)53.33 or 5333(p)	~	A1 5	(Monthly payment=)( $\pounds$ )53.33 or 5333(p)
14. Ribbon marked. To be viewed with graph.			
<ul> <li>(a) (£) 5400</li> <li>(b) Appropriate straight line of best fit, with some points above and below the line at each end of the line, or touching at least one point at each end of the line.</li> </ul>		B1 B1	
(c) Answer should be approximately (£) 7800		B1 3	FT from their line. B0 if no line drawn.

June 2014 UNIT 3 (calculator allowed) Foundation Tier	~	Mark	Comments
15. 1.62		B2	B1 for 1.6(23697). All digits given must be
			correct.
	ļ.,	2	
16. 5 parts = 30 OR $30 \div 5$ OR $7x - 2x = 30$	✓	M1	Accept 5/9=30
(1  part) = 6	1	Δ1	
(1  part) = 0 (Amount shared =) 6 × 9	V	m1	FT their 1 part, provided M1 awarded
= (f) 54	V	Δ1	Award M1A1m1 A0 for answers of f12 and f42
	~	AI	
		4	
17. To be viewed with diagram.			
$360 \div 45$		M1	Or appropriate working using the internal angle.
= 8 sides		A1	
		2	
18. $3x - 6 = x + 2$		B1	For expanding the bracket. FT until 2 <sup>nd</sup> error.
3x - x = 2 + 6		B1	Accept embedded answers
$\mathbf{x} = 4$		B1	
		3	
19. To be viewed with diagram.			
$8.5^2 + 7^2$	<ul><li>✓</li></ul>	M1	
√121·25	<ul><li>✓</li></ul>	A1	
= 11(.011km)	<ul> <li>✓</li> </ul>	Al	
(Race distance = ) $26 \cdot 5(113km)$	<ul><li>✓</li></ul>	B1	FT "their 11.011"+15.5 provided Pythagoras' attempted.
		4	

#### **UNIT 3 - HIGHER TIER**

June 2014 UNIT 3	~	Mark	Comments
nigher Her		B2	B1 for 1.6(23697 ) All digits given must be correct
1.(a) 1.02 1.(b) 9(2 - v)		B1	Di foi 1.0(25077). All digits given must be correct.
1. (c) $0.4$ or equivalent.		B2	B1 for sight of 4 OR -3.6
1.(d) 0.3  OR  3/10		B1	Accept embedded answers
$\frac{1}{1} (e) 3x - 6 = x + 2$		B1	For expanding the bracket FT until 2 <sup>nd</sup> error
3x - x = 2 + 6		B1	Accept embedded answers.
$\mathbf{x} = 4$		B1	
2. Ribbon marked. To be viewed with graph.			
(a) (£) 5400		B1	
(b) Appropriate straight line of best fit, with some points above and		B1	Mark intention.
below the line at each end of the line, or touching at least one point			
at each end of the line.		D.I	
(c) Answer should be approximately (£) 7800		BI	F1 from their line. B0 if no line drawn.
5. (Annual cost of unite) $15000 \times 4.028(n)$		M1	Alternative mark scheme- Monthly cost $(Monthly cost of units -)15000 \cdot 12 \times 4.028(n)$
(Annual cost of units) $15000 \times 4.028(p)$ 60420(p) or (f)604.2(0)	√		(Monully cost of units $=$ )15000 $\pm$ 12×4.028(p) (f)50.35 or 5035(p)
00420(p) of ( $z$ )004.2(0)	✓	AI	(£)50.55 01 5055(þ)
(Fixed charge per year $\pounds 6.98 \times 12 =$ ) (£)83.76	1	B1	(Monthly discount =) $(48 \div 12 =)(\pounds)4$
	•		
(cost of units + fixed charge per year $-48$ ) $\div 12$	$\checkmark$	M1	$(\pounds)604.2(0) \div 12 + 6.98 - 4$ .
			$(= \pounds 50.35 + 6.98 - 4)$
(£639.96÷12 or 63996÷12)			
(Monthly payment=)( $\pounds$ )53.33 or 5333(p)	$\checkmark$	Al	(Monthly payment=)( $\pounds$ )53.33 or 5333(p)
OWC			
QwC. Look for			
LOOK IOI			
• units - p, 2 spalling in at least 1 statement/sontance			
<ul> <li>spenning in at least 1 statement/sentence</li> <li>clarity of text explanations</li> </ul>			OWC2 Presents material in a coherent and logical
• clarity of text explanations			manner, using
OWC <sup>2</sup> : Candidates will be expected to			acceptable mathematical form, and with few if any
• present work clearly, with words or quantities shown for			errors in spelling, punctuation and grammar.
clarity of process or steps			
AND	✓	QWC	QWC1 Presents material in a coherent and logical
• make few if any mistakes in mathematical form, spelling,	$\checkmark$	2	manner but with some errors in use of mathematical
punctuation and grammar in their answer			form, spelling, punctuation or grammar
			OR
QWC1: Candidates will be expected to			evident weaknesses in organisation of material but
<ul> <li>present work clearly, with words or quantities shown for</li> </ul>			arrors in spelling, punctuation and grammer
clarity of process or steps			errors in spering, punctuation and grammar.
OR N. C. M. M. M. M. M. M. M.			OWC0 Evident weaknesses in organisation of material.
• make few if any mistakes in mathematical form, spelling,			and errors in use of mathematical form, spelling,
punctuation and grammar in their answer			punctuation or grammar.
4. (a) Suitable uniform scales starting at zero, with axes labelled.		B1	
Correct grouped frequency diagram. [Heights of 80,60,52,32,16]		B2	B1 for 1 error in heights of bars.
			If no marks awarded, SC1 for a frequency polygon with
		D1	all correct heights.
4. (b) Sight of the mid-points $0.5$ , $1.5$ , $2.5$ , $3.5$ & $4.5$	<b>√</b>	BI	ET de sin mid a sinde annexided de ser en eside in de slimite
Sum of mid-points $\times$ freq = 444	✓	MI	of each group including the limits themselves
÷ 240	1	m1	of each group, including the mints themserves.
= 1.8(5) (hours) or equivalent.	v v	A1	ISW. Accept 1.9. Allow 2 if 1.85 has been seen.
$A(c)   1 \le t \le 2$ (hours)	•	R1	Allow 1 to 2 hours
7. (c) $1 \le 1 \le 2$ (nous) 5. 5 parts - (f)30 OR 30 $\pm$ 5 OR 7x - 2x - 30 OR equivalent	<b>√</b>	M1	Accept $5/9 - 30$
$(1 \text{ part}) = (\pounds)6$	√	A1	1.000pt 5/7 = 50
(Amount shared =) $6 \times 9$	✓	m1	FT their 1 part, provided M1 awarded.
= (£) 54	✓	A1	Award M1A1m1A0 for answers of £12 and £42.
6. To be viewed with diagram.			
360 ÷ 45		M1	Or appropriate working using the internal angle.
= 8 sides		A1	

June 2014 UNIT 3 Higher Tier	~	Mark	Comments
7. To be viewed with diagram.			
$(SB^2 =) 8.5^2 + 7^2$	<ul> <li>✓</li> </ul>	M1	
$(SB^2 =)$ 121.25 or $SB = \sqrt{121.25}$	<b>√</b>	AI	
(BB =) 11(.011Km) (Race distance =) 26 5(113 km)	¥	AI B1	FT 'their 11 011' $\pm$ 15 5 provided Pythagoras
(Race distance – ) 20.5(115kii)	v	DI	attempted.
8. Use Overlay.			
Correct line drawn.		B1	Mark intention ±2mm.
Correct arc drawn from B.		Bl	±2mm.
Correct region identified within the triangle.		BI	and BC and an arc centre B but outside tolerances.
9. 920000 - 30000 (= 890000)		M1	OR $9.2 \times 10^5 - 0.3 \times 10^5$ OR $92 \times 10^4 - 3 \times 10^4$ OR $89 \times 10^4$
$-8.9 \times 10^{5}$		Δ1	OR 890×10 <sup>3</sup>
$\frac{-6.7 \times 10}{10. \text{ (Volume of block =) } 10 \times 8 \times 5 \text{ (=400) (cm^3)}}$	$\checkmark$	B1	
(Density of metal =) $1100 \div 400 \text{ OR } 1.1 \div 400 \text{ OR } 1.1 \div 0.0004$	1	M1	FT 1100 or 1.1 ÷ 'their volume' provided it is a
			product. Volume may be given in another metric unit.
= 2.75 OR 0.00275 OR 2750	<ul> <li>✓</li> </ul>	A1	
Appropriate unit g/cm <sup>3</sup> kg/cm <sup>3</sup> kg/m <sup>3</sup>	✓	U1	
<b>11. Ribbon marked</b>		D1	
(a) 16, 40, 100, 164, 200 (b) Use Overlay. To be viewed with table from (a).		DI	
Idea, unique vertical plotting of the upper class boundary		M1	FT, for all marks, their cumulative frequencies,
consistently with the corresponding cumulative frequency.			provided an attempt made to be cumulative.
2 points plotted correctly.		A1	
All points correct and joined by straight lines or a curve, including		A1	SC1 if points plotted at mid-points and joined by
			straight lines or a curve, including to0.
(c) To be viewed with graph from (b).		DO	Accent 130
200 – men feading at 250 evaluated coffectiv.		D2	B1 for sight of their reading at 250 OR 84+16+1/2 of 60.
12. Method of working with all 3 terms to clear the 2 fractions.	√	M2	M1 for appropriate working for 2 of the 3 terms.
	<ul> <li>✓</li> </ul>		Clearing implies denominator of 1.
Correctly expanding brackets and collecting like terms i.e.			
(24x - 2 - 5x = -40  leading to)  19x - 2 = -40	V I	AI	F1 provided at least M1 awarded. F1 until 2 <sup>th</sup> error.
x2	v	AI	If no marks awarded SC1 for sight of $(19x - 2)/10$ .
13. To be viewed with diagram.			
15° marked on diagram or used correctly.	$\checkmark$	B1	
$h = \tan 15^{\circ} \times 700 \qquad \text{OR} \qquad h = 700/\tan 75^{\circ}$	11	M2	FT their angle of depression.
1 107(5(4 ) 100	1		M1 for $tan15^\circ = h/700$ OR M1 for $tan75^\circ = 700/h$
h = 18/(.564) or 188	Ň	AI	An answer of 2612(.435) may earn B0M2A1 or B1M0A0 Watch out for compensating errors
14. Ribbon marked.			
(a) Use overlay.			
Calculation of at least 3 of the coordinates.		B1	(-2,8) $(-1,3)$ $(0,0)$ $(1,-1)$ $(2,0)$ $(3,3)$ $(4,8)$
Plotting at least 4 correct points.		P1	
Correct curve.		CI	CAO.
0 and 2		B1	FT from their non-linear graph.
(c) To be viewed with graph from (a).			
Rearranging equation to $x^2 - 2x = x + 1$		M1	
Line $y = x + 1$ drawn		A1	
Solution of approximately -0.3 AND 3.3		AI	FT their curve. A solution obtained using the formula $M0A0A0$
15. To be viewed with diagram.			
(35/360)×2π×25		M1	
= 15.2() up to 15.3		A1	Accept an answer of 15 from correct working.
16. $p = k/r^2$ or $p \alpha 1/r^2$		B1	
$6 = k/3^2$ $p = 54/r^2$		Ml A1	FT for non-linear start only.
$p - \frac{34}{1}$	1	AI	

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<b>17. To be viewed with diagram.</b> (Area =) $(6x+4)(x+2)/2$ $3x^2 + 8x + 4 = 10$ OR $6x^2 + 16x + 8 = 20$ $3x^2 + 8x - 6 = 0$ OR $6x^2 + 16x - 12 = 0$ $-8 \pm \sqrt{(8^2 - 4 \times 3 \times -6)}$ OR $-16 \pm \sqrt{(16^2 - 4 \times 6 \times -12)}$ $2 \times 3$ $(-8 \pm \sqrt{136})/6$ OR $(-16 \pm \sqrt{544})/12$ x = 0.6(10  or  -3.276) x = 0.6(10)		M1 m1 A1 M1 A1 A1 A1	Allow 1 slip. CAO. FT their equation provided it's a quadratic of comparable difficulty. Allow one slip in substitution. CAO from 'their quadratic.' CAO from 'their quadratic.' Paralisation that x = 2 is not a valid solution
x = 0.6(10)	~	AI	FT provided $2^{nd}$ M1 awarded AND 1 possible and 1 impossible solution.
<b>18. To be viewed with diagram.</b> Strategy to find AD using sine rule, equating it to BC, then using cosine rule to find angle BFC.	~	S1	
$AD = 10/\sin 68 \times \sin 60$	1	M2	M1 for AD/sin60 = $10/sin68$
$cosBFC = \frac{14^{2} + 18^{2} - AD^{2}}{2 \times 14 \times 18} $ (0.8586452) BFC = 30.8(351°)	✓ ✓	M2 A1	FT their derived AD. M1 for $AD^2 = 14^2 + 18^2 - 2 \times 14 \times 18 \times \cos BFC$
19. (a) Correct sketch, with inflection points at $(0,0)$ , $(180,0)$ and $(360,0)$ AND vertical asymptotes at $x = 90$ and $x = 270$ .		B2	B1 for a sketch with inflection points at $(0,0)$ , $(180,0)$ and $(360,0)$ OR vertical asymptotes at $x = 90$ and $x = 270$ .
19. (b) 116(.565°) or 117 (°) 296(.565°) or 297(°)		B1 B1	FT 180 + their first angle. MR-1 if additional angles given within the range 0 to 360.

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