GCSE MARKING SCHEME

SUMMER 2016

**GCSE MATHEMATICS LINKED PAIR METHODS
UNIT 1 FOUNDATION
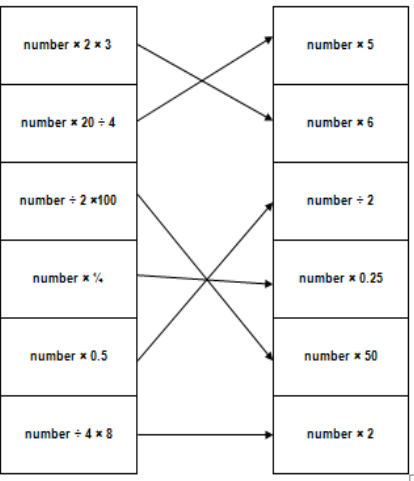4363-01**

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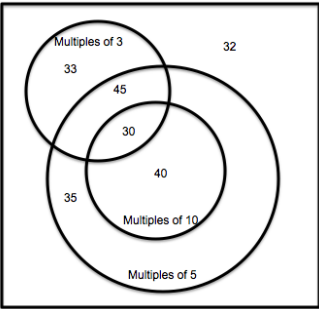
It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conference, teachers may have different views on certain matters of detail or interpretation.

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

METHODS IN MATHEMATICS
UNIT 1 (FOUNDATION TIER) SUMMER 2016

Methods in Mathematics Unit 1 Foundation Tier	Mark	Comments
1. (a)(i) 5003	B1	
(ii) Thirty five thousand two hundred and one	B1	
(b) (i) 101	B1	
(ii) 26	B1	
(iii) 99	B1	
(iv) 12	B1	
(c) (i) 2460	B1	
(ii) 36 000	B1	
(d) (i) 1, 2, 4, 5, 10, 20	B2	B1 for 6 correct factors and 1 incorrect value OR any 4 or 5 factors and no incorrect values.
(ii) Any two multiples of 6. Eg 6, 12, 18…	B1	
(e) 35	B1	
Add 8 (to the previous term)	B1	Accept plus 8, +8, n+8, 8n-5
	13	
2. Correct drawings and properties (GDEA)	B4	B1 for each correct drawing WITH correct property or B1 for each TWO correct drawings or B1 for each TWO correct properties
	4	
3. 0.3, 0.3	B2	B1 for sum of their probabilities = 0.6
	2	
4. (a) 546	B1	
(b) 71	B1	
(c) 417 $\underline{\quad 23 \text{ x}}$ 8340 OR 9200 $\underline{1251}$ 230 $\underline{9591}$ $\underline{\quad 161}$ 9591	M1 A1 A1	Any correct method for multiplying 417 by 23 For either 8340 or 1251 OR 9200 or 230 or 161, provided no place value error'. (Apply 'one error' in other methods) CAO Place value errors get M0 A0 A0
(d) 4.2	B1	
(e) 0.04	B1	
(f) 7	B1	
(g) 5	B1	
	9	

	Methods in Mathematics Unit 1 Foundation Tier	Mark	Comments
5.	number × 2 × 3 number × 5 number × 20 ÷ 4 number × 6 number ÷ 2 ×100 number ÷ 2 number × ¼ number × 0.25 number × 0.5 number × 50 number ÷ 4 × 8 number × 2	B3 3	Award B2 for three or four correct pairs Award B1 for two correct pairs
6.(a) All points plotted correctly (b) (0, 5)	B3 B1 4	B1 for each point plotted correctly Allow B1 if all three plotted reversely in (a) but still give an answer of (0,5) FT from their plotted points in (a) provided sides are not vertical and horizontal
7.(a) For 2 correct in a form which allows comparison For all 3 correct in forms which allow comparison 9/10, 3/4, 5/8 (b) 40/200 1/5	B1 B1 B1 M1 A1 5	
8. Showing all 36 possible totals Eg	B2	Other examples: Organised list showing totals Tree Diagram showing totals B1 for at least 21 correct possibilities {(x;y) x=1,2,3,4,5,6; y=1,2,3,4,5,6} Ordered pairs Organised list Tree Diagram OR B1 for correctly listing all the possibilities needed to answer any 2 parts FT 'their values' provided at least B1 awarded Penalise consistent incorrect denominator once only

		(2nd Dice)					
	+	1	2	3	4	5	6
(1st Dice)	1	2	3	4	5	6	7
	2	3	4	5	6	7	8
	3	4	5	6	7	8	9
	4	5	6	7	8	9	10
	5	6	7	8	9	10	11
	6	7	8	9	10	11	12

- (P(Total=7)=)   6/36   B1   ISW
- (P(Total>10)=)   3/36   B1   ISW
- (P(Total=square number)=) 7/36   B1   ISW

Methods in Mathematics Unit 1 Foundation Tier	Mark	Comments
Look for: Eg Two way table or ordered pairs or organised list of possibilities with clear labelling or a tree diagram QWC2: Candidates will be expected to • present relevant work clearly, with words explaining process or steps AND • make few if any mistakes in spelling, punctuation and grammar QWC1: Candidates will be expected to • present work clearly which is mostly relevant, with words explaining process or steps OR • make few if any mistakes in spelling, punctuation and grammar and include units in their final answer	QWC 2 7	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 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.

9.(a) 180-67
        113(˚)
 	
(b) Sight of a correct 80(˚)   OR
   reference to an appropriate isosceles triangle
 	
Sight of correct 50(˚) OR correct 40(˚)
 	
x= 130(˚)
y= 310(˚)
	M1
	A1
	
	B1
	
	B1
	
	B1
	B1
	6
		
		This 80˚ could refer to the angle adjacent to the 100˚ OR the sum of the base angles B and C in the relevant isosceles triangle OR vertical line parallel to CD through the centre of the rectangle (at the angle 100˚) (working towards the 50˚)
		
		Angles may be seen on the diagram.
		Gaining this B1, also gains 1st B1
		
		FT 'their x' + 180(˚)

10(a) 0.625
        $0.27\overset{..}{27}$... or $0.\overset{..}{27}$
        Recurring, Terminating, Recurring
 	
(b)Method that '... × 12 + 56 = 200, or
        $\dfrac{... \times 12 + 56}{100} = 2$
                Number is 12
	B1
	
	B1
	B1
	
	M1
	
	A1
	5
		
		FT provided at least 1 of the decimals is correct i.e. at least B1 previously awarded
		
		OR 2×100, then 'their 200' – 56, then 'their 144' ÷ 12, or trial & improvement with correct operations in the correct order
		CAO

11. (a) 13x (b) -5a+7b (c)(i) -8 (ii) -1 (iii) 1	B1 B2 B1 B1 B1 6	 Must be in an expression B1 for either -5a or 7b
12. 440 × 6 ÷ 11 (£)240	M1 A1 2	Allow with sight of the smaller share

Methods in Mathematics Unit 1 Foundation Tier	Mark	Comments
13(a) Reason, e.g. 'all multiples of 10 are multiples of 5', 'multiples of 10 are also multiples of 5', 'not all multiples of 5 are multiples of 10', 'multiples of 10 is a subset of multiples of 5'	E1	Do not accept 'some multiples of 10 are also multiples of 5'
(b)(i) 6 numbers placed correctly 	B3	B2 for 4 or 5 numbers uniquely placed correctly, the other 2 or 1 number(s) respectively omitted or incorrectly placed or repeated, OR B1 for 2 or 3 numbers placed correctly, the other 4 or 3 numbers respectively omitted or incorrectly placed or repeated *Penalise extra numbers included -1 throughout*

(ii)   0
        1/6
        2/6 (= 1/3)
	B1
	B1
	B1
	7
		In (b)(ii) ignore incorrect cancelling.
		FT their Venn diagram
		CAO

14(a) $360 \div 18$ 20 (sides)	M1 A1	Or equivalent **complete** method

(b) (Total of interior angles) $3 \times 180(°)$
 	
                        $540(°)$
 	
$125(°) + 130(°) + 135(°) + \ldots + \ldots =$ sum of interior angles of a polygon
        $(540(°) - 390(°)) \div 2$ or $150(°)/2$
 	
            (Each interior angle is) $75(°)$
	M1
	
	A1
	
	M1
	
	m1
	
	A1
	
	7
		or $5 \times (180(°) - 360(°) \div 5)$
		alternative full method
		
		FT 'their 540' provided > 390
		
		Rearranged form or manipulated correctly to this stage of working
		
		Alternative:
		(Exterior angles are)
		$180(°) - 125(°), 180(°) - 130(°)$ & $180(°) - 135(°)$ *M1*
		
		(Each remaining exterior angle) FT from M1
		    $360(°) - 55(°) - 50(°) - 45(°)$ *M1*
		               $\div 2$ *m1*
		(depends on at least M1 previously awarded)
		(Each exterior angle is) *$105(°)$* *CAO* *A1*
		(Each interior angle is) *$75(°)$* *A1*
		FT 180 – 'their 105' provided M1, M1 and m1 awarded