



GCSE MARKING SCHEME

SUMMER 2018

**GCSE (NEW)
MATHEMATICS – UNIT 1 (INTERMEDIATE TIER)
3300U30-1**

INTRODUCTION

This marking scheme was used by WJEC for the 2018 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.

WJEC GCSE MATHEMATICS (NEW)

SUMMER 2018 MARK SCHEME

GCSE Mathematics Unit 1: Intermediate Tier Summer 2018 Final Marking Scheme	Mark	Comments
1.(a) Both 13 AND 19	B2	Accept in any order. B1 for 17 AND 15. If B2 not awarded, B1 for any TWO of 11, 13, 17 and 19.
1.(b) 12	B2	B1 for 16 or 18 or 20. B1 for 12 AND any multiple of 12 (not in the list).
1.(c) 17	B1	
2.(a) 10 miles	B1	
2.(b) 1 kg	B1	
2.(c) 7 pints	B1	
3.(a) -5 -1 1	B2	B2 for all three correct. B1 for one or two correct.
3.(b) Correct plots. Straight line from (-4,-7) to (6,3)	P1 L1	FT 'their y-values at x = -2, 2 and 4'. 2 correct plots sufficient as they are told it's a straight line. Allow $\pm \frac{1}{2}$ a small square'. P0 if any incorrect plot. CAO no FT. Allow ± 1 small square'. Must be from (-4,-7) to (6,3) but allow 'extended' line. A correct line gains P1L1.
3.(c) (-4,-7) (6,-7) (6,3) (-4,3) (In any order)	B2	B2 for all four correct. B1 for three correct. <i>Only award B1(not B2) if <u>all four</u> correct coordinates given for their extended line.</i> If L0 from a 'shortened <u>correct</u> line' then FT (for B2 or B1). If L0 from an incorrect line then FT (for B2 or B1) only if a quadrilateral has been drawn using 'their line' as a <u>diagonal</u> . SC1 for <u>the correct</u> square <u>drawn</u> but no (or incorrect) coordinates given.
4.(a) Statement indicating that 0.3 is less than 0.5. OR Statement indicating that probability of selecting a blue ball should be greater than 0.5. OR Statement that refers to a proportion of the balls e.g. '(Only) 30% (of the balls) are blue', '(Only) 3/10(th)s (of the balls) are blue'.	E1	B0 for e.g. 'Fewer than half the balls are blue'. 'Should be higher', 'Would be above 0.3'. Allow correct interpretation of 0.3 e.g. '(Only) 30 out of 100 are blue', '(Only) 15 out of 50 are blue'. Accept any indication for 0.5, e.g. 'half', ' $\frac{1}{2}$ '.
4.(b) 0.7 or equivalent.	B1	B0 for incorrect notation e.g. '7 out of 10'.
4.(c) 0.3×50 15	M1 A1	If <u>no</u> marks gained, allow SC1 for sight of 15 e.g. '15/50', 15 : 35.
5.(a) Correct cuboid	B2	For B2, their cuboid must have edges along or parallel to the 3 directions usually associated with isometric paper (the two diagonals and the vertical). B1 for any one edge dealt with correctly for all its three occurrences <u>in a cuboid</u> . For any mark to be awarded the line must go 'through the dots' AND have both ends 'on a dot'. Ignore attempt at handling 'hidden lines'.
5.(b) (Volume =) $6 \times 4 \times 3$ = 72 cm ³ .	M1 A1 U1	Any further manipulation to $6 \times 4 \times 3$ is M0. Independent of other marks.

6.(a)	$t_7 = t_6 + 3$	B1	
6.(b) (i)	9	B1	Mark final answer.
6.(b) (ii)	-5	B1	Mark final answer.
7.	50	B3	Award B1 for each of the 2nd, 3rd and 4th condition <u>1-20 gain B1 apart from,</u> B0 for 4,12,16,20. B2 for 2,18. <u>21-79 gain B2 apart from,</u> B1 for 24,28,36,40,44,48,52,56,60,64,68,76. B3 for 50. <u>80-100 gain B1 apart from,</u> B0 for 80,84,88,92,96,100. B2 for 98. <u>Otherwise</u> B0 if number greater than 100. B0 if not a whole number.
8.	(EC = Side of the square $\Rightarrow \frac{28}{4}$ $= 7(\text{cm})$ (Area of triangle CDE $\Rightarrow \frac{7 \times DE}{2} = 35(\text{cm}^2)$ $(DE =) 10(\text{cm})$ Organisation and Communication. Accuracy of writing.	M1 A1 M1 A1 OC1 W1	<i>Lengths may be seen on the diagram.</i> Any side of square shown as 7(cm) is M1A1. FT 'their stated or shown length for EC'. For OC1, candidates will be expected to: - present their response in a structured way - explain to the reader what they are doing at each step of their response - lay out their explanation and working in a way that is clear and logical For W1, candidates will be expected to: - show all their working - make few, if any, errors in spelling, punctuation and grammar - use correct mathematical form in their working - use appropriate terminology, units, etc.
9.(a)	Correct reflection in $y = 1$.	B2	B1 for correct reflection in $x = 1$ OR B1 for sight of line $y = 1$
9.(b)	<u>Clockwise rotation of $90(^{\circ})$ about the origin.</u>	B3	For all four components. Accept anticlockwise rotation of 270° about the origin. B2 for any three. B1 for any two. 'Origin' may be stated as e.g. (0,0) or 0 or O. Do not accept 'turn' for rotation. Allow for 'about the origin' any reference to the origin. e.g. 'in the origin', 'around the origin', 'from (0,0)' etc. If not a single transformation (e.g. 'clockwise rotation of 90 and then') penalise -1 mark from any marks gained. (Above example gains B2 -1 = 1 mark.)
10.(a)	12	B1	
10.(b)	$\times 1.04'$	B1	
10.(c)	$3\frac{1}{5}$	B1	

14.(a)	1.56×10^6	B2	Mark final answer. B1 for sight of 15.6×10^5 OR 1 560 000 OR equivalent correct value but not in standard form.
14.(b)	1.3×10^5	B2	Mark final answer. B1 for sight of 13×10^4 OR 130 000 OR equivalent correct value but not in standard form.
15.	$3x(4x + y)$	B2	Accept $3x(4x + 1y)$ B1 for $3x(4x \pm \dots)$ or $3x(\dots + y)$ B1 for $3(4x^2 + xy)$ or $x(12x + 3y)$.
16.	(ADC $\Rightarrow$) 109° $x = 180 - 26 - 109$ $= 45^\circ$	B1 M1 A1	<i>Answers may be written on the diagram.</i> Allow for sight of 109° . FT 'their 109° ' (may be clearly indicated on the diagram) <u>provided</u> $\neq 71$ and $\neq 26$. An answer of 45° gains all 3 marks.
17.	Correct construction of perpendicular bisector of line AB. Correct construction of 60° at A. Arc of radius 6 cm, centre A. Correct region identified.	B2 B1 B1 B1	<i>Allow $\pm 2^\circ$ and $\pm 2\text{ mm}$</i> B1 for a perpendicular bisector with no arcs or only one pair of intersecting arcs (above or below) shown. B1 for two pairs of correct arcs, with no line or an incorrect line. B1 Must show relevant arcs. B1 Must be of sufficient length so as not to be considered a 'point' or a 'notch'. B1 FT for similar viable region (a straight line intersecting AB, an angle at point A and an arc with centre A) even if no previous marks gained.
18.	$\angle BXC = 80^\circ$ Reason: 'BX = BC' OR 'Isosceles triangle' $\angle AXB (= 180 - 80) = 100^\circ$ Reason: 'Angles on a straight line'. $\angle ABX (= 180 - 40 - 100) = 40^\circ$ Reason: 'Angles in a triangle'. Statement 'So AX = BX', Reason: 'Two equal angles (in a triangle)' OR $\angle ABX = \angle BAX$ OR 'Isosceles triangle'. Sight of at least TWO of the above reasons.	B1 B1 B1 B1 E1	<i>Angles shown on the diagram take precedence.</i> If any angle is not named then it must be unambiguously identified either on the diagram, from a given reason or in further work. (e.g. must be convincing that $X = 80$ is referring to BXC and not AXB.) If initial incorrect assumptions are made then allow correct FT methods to calculate other relevant angles. B1 B1 FT $180 - \text{'their } \angle BXC \text{'}$ B1 FT $180 - 40 - \text{'their } \angle AXB \text{'}$. B1 Only available if $\angle ABX$ stated or shown to be 40° E1 Reasons must be appropriate AND are dependent on associated B1 gained.

<u>Alternative method 1.</u> $\angle BXC = 80(^{\circ})$ Reason: 'BX = BC' OR 'Isosceles triangle'. $\angle CBX (= 180 - 80 - 80) = 20(^{\circ})$ Reason: 'Angles in a triangle'. $\angle ABX (= 180 - 80 - 40 - 20) = 40(^{\circ})$ Reason: 'Angles in a triangle'. Statement 'So AX = BX'. Reason: 'Two equal angles (in a triangle)' OR $\angle ABX = \angle BAX$ OR 'Isosceles triangle'. Sight of at least TWO of the above reasons.	B1 B1 B1 B1 E1	FT 180 – 80 – 'their $\angle BXC$'. FT 180 – 80 – 40 – 'their $\angle CBX$'. Only available if $\angle ABX$ stated or shown to be $40(^{\circ})$ Reasons must be appropriate AND are dependent on associated B1 gained.
<u>Alternative method 2. (Assumption that AX = BX).</u> $\angle ABX = 40(^{\circ})$ Reason: 'AX = BX' OR 'Isosceles triangle'. $\angle AXB (= 180 - 40 - 40) = 100(^{\circ})$ Reason: 'Angles in a triangle'. $\angle BXC = 80(^{\circ})$ Reason: 'Angles on a straight line'. Statement 'So BX = BC' (as given) Reason: 'Two equal angles (in a triangle)' OR '$\angle BXC = \angle BCX$' OR 'Isosceles triangle'. Sight of at least TWO of the above reasons.	B1 B1 B1 B1 E1	FT 180 – 40 – 'their $\angle ABX$'. FT 180 – 'their $\angle AXB$'. Only available if $\angle BXC$ stated or shown to be $80(^{\circ})$ Reasons must be appropriate AND are dependent on associated B1 gained.
<u>Alternative method 3. (Assumption that AX = BX).</u> $\angle ABX = 40(^{\circ})$ Reason: 'AX = BX' OR 'Isosceles triangle'. $\angle CBX (= 180 - 80 - 40 - 40) = 20(^{\circ})$ Reason: 'Angles in a triangle'. $\angle BXC (= 180 - 80 - 20) = 80(^{\circ})$ Reason: 'Angles in a triangle'. Statement 'So BX = BC' (as given) Reason: 'Two equal angles (in a triangle)' OR '$\angle BXC = \angle BCX$' OR 'Isosceles triangle'. Sight of at least TWO of the above reasons.	B1 B1 B1 B1 E1	FT 180 – 80 – 40 – 'their $\angle ABX$'. FT 180 – 80 – 'their $\angle CBX$'. Only available if $\angle BXC$ stated or shown to be $80(^{\circ})$ Reasons must be appropriate AND are dependent on associated B1 gained.