

UNIT 2: CALCULATOR-ALLOWED, INTERMEDIATE TIER
GENERAL INSTRUCTIONS for MARKING GCSE Mathematics - Numeracy

1. The mark scheme should be applied precisely and no departure made from it. Marks should be awarded directly as indicated and no further subdivision made.
2. Marking Abbreviations
 The following may be used in marking schemes or in the marking of scripts to indicate reasons for the marks awarded.
 cao = correct answer only
 MR = misread
 PA = premature approximation
 bod = benefit of doubt
 oe = or equivalent
 si = seen or implied
 ISW = ignore subsequent working

 F.T. = follow through (✓ indicates correct working following an error and ✗ indicates a further error has been made)

 Anything given in brackets in the marking scheme is expected but, not required, to gain credit.
3. Premature Approximation
 A candidate who approximates prematurely and then proceeds correctly to a final answer loses 1 mark as directed by the Principal Examiner.
4. Misreads
 When the data of a question is misread in such a way as not to alter the aim or difficulty of a question, follow through the working and allot marks for the candidates' answers as on the scheme using the new data.
 This is only applicable if a wrong value, is used consistently throughout a solution; if the correct value appears anywhere, the solution is not classed as MR (but may, of course, still earn other marks).
5. Marking codes
 - 'M' marks are awarded for any correct method applied to appropriate working, even though a numerical error may be involved. Once earned they cannot be lost.
 - 'm' marks are dependant method marks. They are only given if the relevant previous 'M' mark has been earned.
 - 'A' marks are given for a numerically correct stage, for a correct result or for an answer lying within a specified range. They are only given if the relevant M/m mark has been earned either explicitly or by inference from the correct answer.
 - 'B' marks are independent of method and are usually awarded for an accurate result or statement.
 - 'S' marks are awarded for strategy
 - 'E' marks are awarded for explanation
 - 'U' marks are awarded for units
 - 'P' marks are awarded for plotting points
 - 'C' marks are awarded for drawing curves

UNIT 2: CALCULATOR-ALLOWED, INTERMEDIATE TIER

GCSE Mathematics – Numeracy Unit 2: Intermediate Tier	Mark	Comment
1. (a)(i) £3.60 (ii) £3.51 (b) $\frac{3}{5} \times 1.8(0)$ or $1.8(0) - \frac{2}{5} \times 1.8(0)$ or equivalent (£)1.08 (c) $(0.4 \times 3.4(0) =)$ (£)1.36 (cost of grapes) (0.5 kg peaches is $3.46 - 1.36 =$) (£)2.1(0) 1kg of peaches (£)4.2(0)	B1 B1 M1 A1 B1 B1 B1 7	FT 'their derived cost of grapes', not £3.40 FT provided previous B mark awarded
2. FALSE FALSE FALSE TRUE FALSE	B2 2	B1 for any 4 correct
3. (Package) B (Package) G	B2 B2 4	<i>May be given in any order.</i> (Both of these fail on one of the preferred conditions). B1 for A or H chosen. (Fails on two conditions). B0 for C or F chosen. (All fail on three of the conditions) B0 for D and E. (Both fail on a definite requirement).
4. C B A D	B3 3	B3 for all 4 correct B2 for 2 or 3 correct B1 for 1 correct
5. (a) Old tablet: (Loss) 0.35×240 (Selling price=) $240 - 0.35 \times 240$ (£)156 (New tablet costs=) $365 - 0.2 \times 365$ or 0.8×365 (£)292 (Extra money needed)=($292 - 156$) (£)136 Organisation and communication Accuracy of writing (b) C	M1 m1 A1 M1 A1 B1 OC1 W1 B1 9	OR M2 for 0.65×240 FT 'their 156' provided M1 awarded for loss, and 'their 292' provided M1 awarded for new tablet cost SC1 for (£)209 (discount for special offer not considered)

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6. Sight of $\frac{(100 + 40)}{2} \times BC$ or equivalent $\frac{(100 + 40)}{2} \times BC = 3500$ $BC = 2 \times 3500 / 140$ $= 50(m)$	B1 M1 A1 A1 4	For a correct expression for the total area of ABCD in terms of BC. F.T. their area only if in terms of BC and is dimensionally correct. For equating their expression for area, in terms of BC, with 3500. Further F.T. only if of equivalent difficulty
7. (a) Uniform scale on vertical axis. Plotting at least two correct points. Correct line drawn. (b)(10 stone =) 140 (lbs) Any correct strategy, e.g. 14 times their value at 10 lbs. A correct answer for their line.	B1 P1 L1 B1 M1 A1 6	<i>P0, L0 if no attempt at uniform scaling.</i> ± '½ a small square'. The origin may be one of the points. Correct line implies P1L1. For sight of 140. It may be implied in further work. Accept 10 times their value at 14lbs, if line drawn extends that far. F.T. their line, OR B1, M1, A1 for answers between 63(kg) and 64(kg) inclusive.
8. (a) Considering multiples of 18 and 24, e.g. sight of 18, 36, 54, .. AND 24, 48, 72, ..., OR Looking at factor of 18 and 24, e.g. sight of 2×9 AND 2×12 or 2×3×3 AND 2×2×2×3 or other partial factorising Correct list of multiples of 18 to at least 72, or multiple 72 AND Correct list of multiples of 24 to at least 72, or multiple 72, OR Sight of 2×3×3×4 Sight of 72 (as common multiple or number of minutes) Consideration of 16½ hours compared to 72 minutes, e.g. 990/72 Final time 06:00 add 13×72 minutes (or 936 mins = 15.6 hr=15 hrs 36 mins) 21:36	S1 M1 A1 M1 m1 A1 6	At least 3 correct multiples for both 18, 36, 54, 72 24, 48, 72 OR 1 hour 12 minutes FT time from 06:00 for their number of minutes provided S1 and M1 awarded
9. $380 \times 2.54/100 \times$ or 0.0254×380 $380 \times (1+0.0254)^6$ (£)441.72, (£) 441.71(635...), Conclusion, e.g. No as less than £460	B1 M1 A1 E1 4	May be embedded in further calculation Method of adding on different amounts, 6 year period, following attempts to calculate 2.54% (e.g. $380+9.65(2)=389.65(2)$) Accept (£)441 or (£)442 from appropriate working FT from their compounded amount provided M1

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10(a) $7.2^2 - 3.4^2 = h^2$ or other correct initial use of Pythagoras' Theorem $h^2 = 40.28$ or $(h =) \sqrt{40.28}$ $(h =) 6.3(46... \text{ cm})$ Volume = $\frac{1}{2} \times 3.4 \times 6.3(46...) \times 18.4$ 198.52(32...) or 197(.064) or 197.1 $(200 - 198.52(32... \text{ cm}^3) = 1.48 =) 1.5 \text{ (cm}^3)$ (b) Explanation, states or implies e.g. 'too tight', 'could be different shape'	M1 A1 A1 M1 A1 B1 E1 7	Accept $7.2^2 - 3.4^2$, or $7.2^2 = 3.4^2 + ...^2$ FT 'their derived 6.3(46...) Accept answers from premature approximation CAO
11.(a) Mid points 0.5, 1.5, 2.5, 3.5 $0.5 \times 12 + 1.5 \times 44 + 2.5 \times 20 + 3.5 \times 4$ 6 + 66 + 50 + 14 (= 136) ÷ 80 (£)1.7(0) (b) $60 \times 2.3(0) + 80 \times 1.7(0) (=138+136 = 274)$ ÷ (60 + 80) (£)1.96	B1 M1 m1 A1 M1 m1 A1 7	Accept $\pm 1p$ FT their mid-points, within & including bounds Their $\Sigma fx \div 80$ FT 'their £1.70' or 'their Σfx evaluated' $\div 140$. FT their 80 provided from attempted sum of the correct numbers An answer of (£)1.95714... is M1, m1, A0
12.(a) Correct multiplier $\times 0.55 \times 0.8(0)$ $\times 0.44$ Conclusion, e.g. 'not the same as Jane thinks it is $\times 0.35$', '$0.35 \neq 0.44$' (b) $T = 0.55(\times)P$ $R = 0.44(\times)P$	B2 B1 E1 B2 B1 7	B1 for 0.55 and 0.8(0) or $(1-0.45) \times (1-0.2)$ Must show comparative multiplier, i.e. sight of $(\times)0.35$ B1 for $T = P - 0.45(\times)P$ FT their multiplier for (a)(i)
13. Sight of 5 miles $\approx$ 8 km or 1 litre = 1.75 pints 7 km/l $\approx 7 \times 5/8$ miles/l $\approx 7 \times 5/8 \div 1.75$ (miles/pint) $\approx 7 \times 5/8 \div 1.75 \times 8$ (mpg) 20 (mpg)	B1 M1 M1 M1 A1 5	Or equivalent <i>Multipliers could appear in any order</i>
14. 52° or 38° indicated appropriately in the triangle Rig Bay to Jay Cliff = $\sin 52^\circ \times 3.2$ 2.5(216... km) $(3.2 + 2.5... =) 5.7 \text{ (km)}$	B1 M2 A1 B1 5	$\sin 52^\circ = R \text{ to } J/3.2$ FT 'their R to J' provided M1 awarded
15. Correct substitution into formula. Using 16553(p) $U = \frac{16553}{1.05} - 90 \times 31.48$ or equivalent 11.546 (Units used =) 1120	M1 m1 m1 A1 4	Do not penalise using (£)165.53 at this stage. The two 'm' marks may be awarded in either order. C.A.O. Accept answers of 1120 ± 1