REVISE
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1.03 — VAT, discount, profit/loss & buying by instalments

Mark schemes for the 1.03 question pack

Spec 1.8.5, 1.8.7 — Unit 1

SOLUTIONS · 2025 SPECIFICATION

Mark schemes for the 9 questions in the corresponding revise.wales question pack (42 marks total). Sources: legacy WJEC GCSE papers, WJEC SAM, and custom-authored mark schemes. Pack layout © revise.wales.

2(a)(i) Reason, e.g. 'because it is not 30% less than the original amount', 'it is 30% less of a different amount', '30% for Lotty is not the same as 30% for Rafael', '30% of his share is more than 30% of her share', 'it would be 30% of Lotty's winnings so it would not be 30% of Rafael's total winnings', 'Lotty's share will increase by 30% not by the percentage of his amount'	E1	Ignore additional spurious comments Allow a correct reason ignoring calculations provided the reason is not based on calculations Allow 'they do not get the same amount of money to begin with', 'because Rafael has 3 of the ratio when Lotty has the total of 2', 'because Rafael gets a higher ratio than Lotty' Do not accept 'this is because the shares wouldn't be even', 'because Rafael will get more than Lotty', 'he would get 30% less'
2(a)(ii) 2000 × 2 ÷ 5 or equivalent × 1.3(0) or equivalent (£) 1040	 M1 M1 A2	 A1 for intermediate answers of (£)800 or (£)2600
2(a)(iii) (Rafael now wins 2000 – 1040) (£) 960 New ratio fully simplified 13 : 12	B1 B2	FT 2000 - 'their 1040' provided both previous M marks awarded This mark may be implied in further working B1 for new ratio (1040 : 960) with at least one step of simplification, e.g. 104 : 96, 520 : 480 FT provided equivalent difficulty, award B1 only if only 1 common factor in the simplification, or B1 for 12 : 13 given in the answer space
2(b) 0.94 × 3000	B1	Allow 3000 × 94/100 Do not accept 3000 – 0.06 × 3000

8(a) (Scale factor =) $^3/_2$ OR $^2/_3$ or equivalent Sight of $(^3/_2)^2$ OR $(^2/_3)^2$ or equivalent (Cost of paint =) 1.60 × $(^3/_2)^2$ or equivalent = (£)3.6(0)	B1 B1 M1 A1	Sight of (£)2.4(0) implies this B1 This implies previous B1
8(b) 12 ÷1·2 or ×5/6 OR ÷1·25 or ×4/5 = (£) 10 = (£) 9.6(0) ÷1·25 or ×4/5 OR ÷1·2 or ×5/6 = (£) 8	 M1 A1 M1 A1	 (£)9.6(0) followed by 0·75 × 9.6(0) = (£)7.2(0) indicates an incorrect method M0A0M0A0 FT 'their 10' OR 'their 9.6(0)' provided previous M1 awarded An intermediate answer of (£)9 followed by 0·8 × 9 = (£)7.2(0) indicates an incorrect method M0A0M0A0 *Alternative method:* *M2 for* (12÷1·2)÷1·25 or 12×5/6×4/5 or equivalent *A2 for (£)8* *A1 for intermediate answers of (£)10 or (£)9.6(0)*

7(a) (96 ÷ 8 =) 12 or 96 ÷ 12 = 8 or 8 × 12 = 96 1 2 3 4 5 6 7 8 6 18 30 42 54 66 78 90	B1 B1	May be implied by consistent position pattern +12 indicated CAO Sight of 12 for voucher 2 with no further working or entries is B0, B0
7(b) 120 ÷ 80 × 100 or equivalent (£) 150	M1 A1	

3. (Angle AÔB or exterior angle =) $\frac{360}{8}(°)$ $= 45(°)$ (OÂB =) $\frac{180 - 45}{2}$ $= 67{\cdot}5(°)$	 M1 A1 M1 A1	*Answers/working may be seen on diagram.* Sight of 45 (even e.g. OÂB = 45) gains M1A1. FT 'their 45' (but not 60°).
3. Alternative method 1 *(Sum of interior angles =)(8 – 2)×180° or equivalent* *= 1080(°)* *(OÂB =) ½ × (1080 ÷ 8)* *= 67·5(°)*	*M1* *A1* *M1* *A1*	 *(Interior angle =) 135(°) implies M1A1* *FT 'their interior angle sum' (≠ 1440)*
3. Alternative method 2 *(Using 16 right-angled triangles)* *(Angle at O =) 360 / 16* *= 22·5(°)* *(OÂB =) 180 – 90 − 22·5* *= 67·5(°)*	 *M1* *A1* *M1* *A1*	 *FT 'their 22·5'.*
Organisation and Communication. Accuracy of writing.	OC1 W1	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 • write a conclusion that draws together their results and explains what their answer means 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

4(a)(i) (Support1^2 =) $0.9^2 + 1.1^2$ Support1^2 = 2.02 or (Support1 =) $\sqrt{2.02}$ (Support 1 =) 1.4(2... m)	 M1 A1 A1	*Scale drawings are not accepted* Do not accept rounded to 2, unless final answer is 1.42(1... m)** FT from M1 for the correctly evaluated square root of 'their 2.02' provided 'their answer' > 1.1 (m) ***Note, award as follows:* *(Support1^2 =) $0.9^2 + 1.1^2$* *M1* *Support1^2 = 2 or (Support1 =) $\sqrt{2}$* *A0* *(Support 1 =) 1.4(1... m)* *A1 FT* *(Support1^2 =) $0.9^2 + 1.1^2$* *M1* *Support1^2 = 2 or (Support1 =) $\sqrt{2}$* *Allow A1 if ...* *(Support 1 =) 1.42(... m)* *A1 FT*
4(a)(ii) sin base angle = $\frac{1.1 + 0.8}{2.6}$ $\sin^{-1}\frac{1.1 + 0.8}{2.6}$ or $\sin^{-1}$ 0.73(0769....) (Base angle =) 46.95(...°) or 47(°)	M1 m1 A1	OR alternative full method using Pythagoras' theorem then cos or tan OR FT correct statement for 'their inverse trig ratio' Allow 46.88(...°) or 46.9(°) ISW unless subtracted from 90° If no marks, award SC1 for an answer of 50.7(°) or 51(°) from working with Support 1

4(b) (Discount cost of bricks) (516 – 8 × 22.5(0) =) (£) 336	B1	
100 × 336 ÷ 80 or 100 × $\frac{336}{80}$	M1	FT 'their 516 – 8 × 22.5(0)' provided ≠ 516 and ≠ 180 for M1 and possible A1
(£) 420	A1	If no marks, award SC2 for (516 ÷ 0.8 - 180 =) (£) 465 OR SC1 for (516 ÷ 0.8 =) (£) 645 or (100 × 180 ÷ 80 =) (£) 225

8. One correct evaluation $1 \le x \le 2$ 2 correct evaluations $1{\cdot}55 \le x \le 1{\cdot}75$, one < 0, one > 0. 2 correct evaluations $1{\cdot}55 \le x \le 1{\cdot}65$, one < 0, one > 0. $x = 1{\cdot}6$	 B1 B1 M1 A1	*Correct evaluation regarded as enough to identify if 'too high' or 'too low'. If evaluations not seen accept 'too high' or 'too low'.* x $2x^3 + x - 10$ (or check $2x^3 + x = 10$) 1 −7 1·1 −6·238 1·2 −5·344 1·3 −4·306 1·4 −3·112 1·45 − 2·452... 1·5 −1·75 1·55 − 1·002... **1·6 −0·208 1·65 0·634...** **1·7 1·526** 1·75 2·468... 1·8 3·464 (1·62 0·123..) 1·9 5·618 (1·63 0·291..) 2 8 (1·64 0·461..)
9. 85% ≡ 6154 $\frac{6154}{85} \times 100$ OR $\frac{6154}{0{\cdot}85}$ = 7240	B1 M1 A1	Accept any indication. Implies the B1.
10. x = 54(°) Opposite angles (of a) cyclic quad. (add up to 180°). y = 108(°) Angle at the centre (is twice the angle at the circumference).	B1 E1 B1 E1	 Dependent on an attempt at 180 – 126. FT 2 × 'their 54' only if less than 360° Dependent on an attempt at 2 × 'their 54'.
11. Correct enlargement	B2	Otherwise B1 for 2 correct vertices within a triangle. OR for 3 correct vertices in the correct location not joined to form the triangle OR triangle of correct shape, size and orientation in incorrect position OR consistent correct use of an incorrect negative scale factor.
12(a). $(9p + 1)(9p - 1)$	B2	B1 for $(9p \ldots 1)(9p \ldots 1)$
12(b). $(7t - 2)(t + 3)$	B2	B1 for $(7t \ldots 2)(t \ldots 3)$
13. Sight of 297.5 AND 6.5 297.5 ÷ 6.5 = 45.77(km/h)	B1 M1 A1	Accept 6 hours 30 minutes, but not 6.3 hours. If other calculations shown, then the relevant calculation must be identified. Award M1 for their values provided 295≤d<300 AND 6<t≤7 (but not 6 hours 30 minutes). CAO. Correct answer must be clearly identified.
14. sin BAD = (2×70)/(8×19) or equivalent (BAD=) 67(.08…°) (Area of sector ABD=) 67(.08…)/360×π×8^2 Accept answers in the range 37.4(cm^2) to 37.5(cm^2) OR 37(cm^2)	M2 A1 M1 A1	Allow any unambiguous indication of angle BAD. M1 for the correct use of the formula when sinBAD is not the subject, for example: 70 = 1/2×8×19×sinBAD. Allow any answer that rounds to 67(°). Accept 292.9(…)/360×π×8^2 OR 293/360×π×8^2 for the area of the major sector ABD. FT their derived or stated value of angle BAD. Accept an answer in the range 163.5(cm^2) to 163.7(cm^2) OR 164(cm^2) for the area of the major sector ABD.

4(a)(i) Entries 146 and 160 in the table and the cumulative frequency diagram completed correctly (correct plots (11, 146) and (13, 160) and all plots joined)	B2	B1 for any one of the following: • 146 and 160 in the table, correct plots but **not** joined • 146 and 160 in the table, with one correct plot and one incorrect plot in completing the **cumulative** frequency diagram with plots joined • one error in the table, including FT 'their 146' + 14 and these **cumulative** entries used correctly to complete the **cumulative** frequency diagram with plots joined • correct cumulative frequency diagram with plots joined, with incorrect, incomplete or not attempted entries in the table
4(a)(ii) 8.2 to 8.4 (minutes)	B1	Answer space takes precedence Allow 8 minutes 12 seconds to 8 minutes 24 seconds FT reading from the graph for 'their median', from ½ × 'their 160', provided 'their 160' ≥ 110, with a tolerance of ½ small square from 'their **cumulative** frequency graph', provided it is possible to read 'their median' from the vertical axis on the graph paper provided
4(a)(iii) 7.2 minutes	B1	Answer space in the statement takes precedence, if blank award for indication of '7.2' (circled) in the list Allow '7' in the answer space provided 7.2 indicated in the list Do not accept '8' in the answer space if 7.2 indicated in the list
4(a)(iv) $\frac{20}{160}$ (× 100) or $\frac{1}{2}$ × 25 (%) or equivalent 12.5 (%) or 12½ (%)	M1 A1	FT for (100 ×) 20/'their 160', provided 'their 160'> 106 On FT allow rounding or truncation to 1 decimal place
4(b) (Costs are 180 + 220) (£) 400 **AND** (Profit is 700 – 180 – 220) (£) 300 **OR** (Receipts / Costs =) $\frac{700}{400}$ (× 100) (Percentage profit is) $\frac{300}{400}$ (× 100) or $\frac{700}{400}$ (× 100) – 1 (× 100) 75 (%)	B1 M1 A1	May be embedded, e.g. 700 – 400 = 300 (= 1.75 or 175%) FT 'their 400' and 700 – 'their 400' provided their costs or profit are ≠ 180, ≠ 220 and ≠ 700 CAO Allow if all costs and the total are consistently multiplied by 3.
4(c) 8(.)40 ÷ 1(.)20 or 8(.)40 – 8(.)40 ÷ 6 or equivalent (£) 7 or 700 (p)	M1 A1	Accept a **complete** and **convincing** method of trial and improvement If units are given they must be correct Sight of 7 + 1.40 = 8.40 is awarded M1 A0 unless (£)7 is selected

3(a) B and H in either order	B2	B1 for either B or H selected
3(b)(i) $\frac{42-30}{30}$ (× 100) or $\frac{42}{30}$ (× 100) – 1 (× 100) 40 (%)	M1 A1	Or full reverse method, e.g. • 20% of £30 is 30 ÷ 5 = £6, with either 6 × 2 = (£)12 or 6 × 7 = (£)42 • 10% of £30 is 30 ÷ 10 = £3, with either 3 × 4 = (£)12 or 3 × 14 = (£)42 Allow an answer of £40 from correct working If no marks, award SC1 for an answer of 140(%)
3(b)(ii) (Percentage profit is) $\frac{9\times42-10\times30}{10\times30}$ (× 100) or $\frac{9\times12-30}{10\times30}$ (× 100) or $\frac{9\times42}{10\times30}$ (× 100) – 1 (× 100) or $\frac{378}{300}$ (× 100) – 1 (× 100) or 1.26 (× 100) – 1 (× 100) or equivalent 26 (%) **AND** states 'profit'	M2 A2	Allow a reverse method of finding percentages of 300 used, these percentages must be correct and when added (or subtracted) could lead to an answer of 26% e.g. (2 × 10% =) 20% of 300 is 60 and 6% of 300 is 18 M1 for any one of the following: • (difference between sales and costs) 9 × 42 – 10 × 30 (= 378 – 300) • (sales) (£) 378 AND (cost) (£) 300 • (difference between sales and costs) (£) 78 Mark final answer A1 for any one of the following: • 26(%) • $\frac{78}{300}$ (× 100) or equivalent • $\frac{378}{300}\times100 = 126$ (%) • $\frac{378}{300} = 1.26$ • $\frac{\text{('their } 9\times42' - 10\times30)}{10\times30}\times100$ correctly evaluated and given as a percentage, allow if an error in the decimal part of their answer
3(b)(iii) 8	B1	

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).

UNIT 1: NON-CALCULATOR, HIGHER TIER

GCSE Mathematics Unit 1: Higher Tier	Mark	Comments

End of solutions