REVISE
.wales

1.11 — Ratio in context

Mark schemes for the 1.11 question pack

Spec 1.10.1, 1.10.2 — Unit 1

SOLUTIONS · 2025 SPECIFICATION

Mark schemes for the 13 questions in the corresponding revise.wales question pack (54 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

		length
5(a)(i) Mid points : 1.5, 3, 4.5, 7 1.5 × 2 + 3 × 6 + 4.5 × 8 + 7 × 4 (= 3 + 18 + 36 + 28 = 85) ÷ 20 4.25 (microns)	B1 M1 m1 A1	 FT 'their mid points' provided each one lies within the appropriate group, including bounds Accept 4.3 from correct working, i.e. 85 ÷ 20 seen in working Do not accept 4.2 unless 4.25 or 85 ÷ 20 seen in working
5(a)(ii) 45 dust particles means 3×7 : 3×8 21 : 24 or 21 in total equivalent (A further) 13 (dust particles)	M1 m1 A1	Accept 7×45/(7+8) : 8×45/(7+8) Allow M1, m1, A0 for sight of 8 + 13 = 21 *Alternative:* *Trial & improvement, e.g.* *18 : 27 (is 2 : 3 incorrect)* *19 : 26 (incorrect)* *20 : 25 (is 4 : 5 incorrect)* *21 : 24 (is 7 : 8 correct!!)* *M1 for sight from the above list:* *a trial with correct simplification shown* ***AND*** *--- either for a second trial with correct simplification shown* *--- or the second trial has clearly been dismissed* *m1 Selection of 21 : 24* *A1 (a further) 13 (dust particles)*

GCSE Mathematics – Numeracy Unit 2: Higher Tier Autumn 2016	Mark	Comment
5(b) (Circumference) $5 = 2 \times \pi \times r$ or $5 = \pi \times d$ Radius of the cylinder $\frac{5}{2\pi}$	M1 A1	$(5/2\pi = 0.79577\ldots)$
Volume $\pi \times (5/2\pi)^2 \times 2$	m1	FT 'their r' provided M1 awarded provided 'their r' $\neq 5/\pi$
4 (microns^3)	A2	A1 for $25/2\pi$ or 3.9(…) or 4.0 (microns^3)

1(a) (£) 560 ÷ 7 (= £ 80) 2 × 560 ÷ 7 OR 6 × 560 ÷ 7 OR ⅓ × (560 – 560 ÷ 7) OR 560 – 560 ÷ 7 (Bryn) (£) 160 (Sophie) (£) 480	B1 M1 A1 A1	 CAO CAO *Alternative:(Total prize money)* *560 ×15 ÷ 7 (=£1200) B1* *2 × 1200 ÷ 15 OR 6 × 1200 ÷ 15 M1* *FT 'their 560 ×15 ÷ 7' (= 1200)* *(Bryn) (£) 160 A1 CAO* *(Sophie) (£) 480 A1 CAO* If no marks, award SC1 only for **either** of the following answers (from initially 560÷15) • (Bryn) (£)74(.66...) or (£)75 • (Sophie) (£)222 or (£)223(.98) or (£)224
1(b) (2015 cost of hosting:) 6600 + 0.1 × 6600 (£7260) (2016 cost of hosting:) 7260 + 0.1 × 7260 (£7986) AND (2017 cost of hosting:) 7986 + 0.1 × 7986 (£8784.60) (2017 cost of hosting is) (£) 8784.6(0) Organisation and communication	B1 M1 A1 OC1	 For the appropriate **method** of repeatedly increasing by 10% from 2015 to 2017 FT 'their 6600 + 10%' calculation with 'their 7260' + 10% calculation with their 7986' + 10% calculation Allow intention with sight of rounding or truncation within working, e.g. (£)799 as 10% of (£)7986 CAO Ignore any further working *Alternative* *Sight of 6600 × 1.1^3 M1* *Full method to calculate 1.1^3 and multiply by 6600 m1* *(For method not accuracy, allow arithmetic errors if intention clear.)* *(£) 8784.6(0) CAO A1* If no marks, award SC1 for an answer of (£)8580 (from simple interest, as first B mark is embedded) 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 explanations and working in a way that is clear and logical • write a conclusion that draws together their results and explains what their answer means

13.(a) True False	B1	
13.(b) (lengths in ratio) 24 : 30 (= 4 : 5)	B1	Ratio can be reversed Or equivalent (e.g. scale factor = 1·25 or 30/24 OR 0·8 or 24/30)
(volumes in ratio) 13824 : 27000 (= $4^3 : 5^3$)	B1	Ratio can be reversed Or equivalent (e.g. 'Volume scale factor' = 1·9(53125) or $1·25^3$ or $(30/24)^3$ OR 0·512 or $0·8^3$ or $(24/30)^3$
Statement e.g. '125 is not double 64 (so the increase is not double)', or '64 is not half of 125', or 'Increase is 95(·3125)%'	E1	Depends on B2 provided 4^3 and 5^3 have been evaluated correctly or $1·25^3$, $(30/24)^3$, $0·8^3$ or $(24/30)^3$ evaluated correctly
13.(c) (Scale factor of heights =) $\sqrt{4}$ or 2 OR $\sqrt{\frac{1}{4}}$ or 0·5	B1	
$24 \div \sqrt{4}$ OR $24 \times \sqrt{\frac{1}{4}}$	M1	
= 12 (cm)	A1	*Alternative method:* *M1 for* $24^2 \div 4$ *A1 for* $height^2 = 144$ *or* $(height =) \sqrt{144}$ *A1 for 12 (cm)*

3(a) 190°	B1	
3(b) 332°	B1	
3(c)(i) 8400 ÷ 200 42 (population/km^2)	M1 A1	Or equivalent CAO
3(c)(ii) 5 × 8400 ÷ (3 + 4 + 5) 3500 (people)	M1 A1	Full method required Accept embedded answer, provided clearly Gwyndir

3.(a)	Sight of (£)720 ÷ 9 or (£)80 (£)160 AND (£)560	M1 A1	Allow in any order. Allow (£)160 : (£)560 or (£)560 : (£)160 Sight of (£)160 or (£)560 implies M1
3.(b)	5	B2	B1 for sight of $\frac{1}{0{\cdot}2}$ or $\frac{10}{2}$ or $\frac{5}{1}$ or equivalent. Mark final answer.

4. (One part =) (£)210 ÷ 3 = (£)70 (Total amount =) 14 × (£)70 OR (£)210 + 4 ×(£)70 + 7 × (£)70 = (£)980	M1 A1 m1 A1	FT 'their (£)70' only if M1 gained. Allow m1 for sight of 210 AND 280 AND 490 together as the three shares. *For 210 ÷ 3 × 14 M3* *= 980 A1*
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
5. 4 5 11 12 OR 4 6 10 12 OR 4 7 9 12	B3	May be written in any order. B1 for Range = 8. B1 for Median = 8. B1 for Total = 32. Penalise –1 **once only** for repeated values, negatives or fractional answers e.g. 4, 8, 8, 12 earns B1 B1 B1 –1 (2 marks), 8, 8, 8, 8 earns B0 B1 B1 –1 (1 mark).
6.(a) $(x - 4)(x - 3)$ $(x =) 4$ AND $(x =) 3$	B2 B1	B1 for $(x \ldots 4)(x \ldots 3)$. Ignore '= 0'. Strict FT from their brackets. Allow the following. B2 for x − 4 (=0) AND x − 3 (=0) (B1) (x =) 4 AND (x =) 3 (B1) B1 for x + 4 (=0) AND x + 3 (=0) (B0) (x =) −4 AND (x =) −3 (B1) FT B1 if only (x =) 4 AND (x =) 3 seen. (B1)
6(b) $25x^2 - 20x + 4$	B2	Otherwise B1 for sight of $25x^2 \pm kx + 4$ (allow k = 0) B1 for sight of $25x^2 - 20x - 4$ Mark final answer.

WJEC GCSE MATHEMATICS

AUTUMN 2021 MARK SCHEME

Unit 1: Higher Tier	Mark	Comments
1. (a + b = 180 – 25) = 155 (a =) $\frac{155}{5} \times 2$ OR (b =) $\frac{155}{5} \times 3$ or equivalent a = 62(°) AND b = 93(°)	B1 M1 A1	B1 for sight of 155. FT 'their stated 155'. Allow M1A0 if the angles are reversed and <u>not</u> corrected.
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
2.(a) 360	B2	Mark final answer. B1 for $2^3 \times 3^2 \times 5$ OR B1 for any other common multiple e.g. 720, 1080 etc. unambiguously identified as a final answer OR B1 for sight of correct <u>prime factors</u> e.g. $60 = 2^2 \times 3 \times 5$ or equivalent <u>AND</u> $72 = 2^3 \times 3^2$ or equivalent OR Accurate Venn diagram showing correct prime factors OR B1 for sight of 60, 120, 180, 240, 300, 360, ... <u>AND</u> 72, 144, 216, 288, 360 with no further numbers.
2.(b) For a single method that produces 2 prime factors from the set {2, 3, 3, 7, 7} before the 2nd error. 2, 3, 3, 7, 7 $2 \times 3^2 \times 7^2$	M1 A1 B1	Must be a method of 'repeated division'. C.A.O. for sight of the five correct factors. (Ignore 1s) F.T. 'their primes' provided at least one index form used with at least a square. Do not F.T. non-primes. Allow $(2)(3^2)(7^2)$ and $2.3^2.7^2$ Do not allow $2,3^2,7^2$. Inclusion of 1 as a factor gets B0.

2. $(4(.)40 \div 3.3) \times 9 \div 10$ $\left(= \frac{4(00)}{3} \times \frac{9}{10}\right)$ or $\left(\frac{9}{10} \times 4(.)40\right) \div 3.3$ $\left(= \frac{3.96}{3.3}\right)$ or $4 \times \frac{9}{10} \div 3$ $\left(= \frac{3.60}{3}\right)$ or equivalent full method	M2	<u>Accept equivalent in pence throughout</u> M1 for any one of the following or equivalent: • (1kg Sparkle costs) $4(.)40 \div 3.3$ $\left(= \frac{4(00)}{3}\right)$ • (3.3kg Dazzle costs) $\frac{9}{10} \times 4(.)40$ $(= 3(.)96)$ • (3kg Dazzle costs) $4 \times \frac{9}{10}$ $(= 3(.)60)$ • (3kg Sparkle costs) $4(.)00$
(£)1.2(0) or 120(p)	A2	CAO. If units are given they must be correct Do not award A2 or A1 from incorrect working Award A1 (from M1 or M2) for any one of the following: • (1kg Sparkle costs) $\frac{4(00)}{3}$ or 1.33(…) or 133.(..) • (3.3kg Dazzle costs) 3(.)96 • (3kg Dazzle costs) 3(.)60 Award A1 (from M2) for a correctly evaluated FT, with final answer rounded or truncated to a penny, for any one of the following: • 'their $4(.)40 \div 3.3' \times \frac{9}{10}$ • 'their $\frac{9}{10} \times 4(.)40' \div 3.3$ • 'their $4 \times \frac{9}{10}$' $\div 3$

6(a) 150 ÷ (22+3) × 22 OR 150 ÷ (22+3) × 3 (Volume of copper =) 132 (cm^3) AND (Volume of tin =) 18 (cm^3)	M1 A1	May be implied in further working
(Mass of statue =) 132×8.96 + 18×7.31 (1182.72 + 131.58)	m1	Allow m1, but A0, for use of rounded or truncated values of 8.96 and 7.31 FT 'their 132' and 'their 18'
(Mass of statue =) 1314(.3) (g)	A1	ISW FT provided one of their volumes is correct. Accept 1.3(143) kg from sight of 1314(.3) (g) or 1.314(3) (kg)
6(a) <u>Alternative method calculating mass directly:</u> *(Mass of statue =)* *150÷(22+3)×22×8.96 + 150÷(22+3)×3×7.31*	*M2*	*Allow M2, and possible A1 only, for use of rounded or truncated values of 8.96 and 7.31* *M1 for 150÷(22+3)×22×8.96 (=1182.72) OR 150÷(22+3)×3×7.31 (=131.58)*
(Mass of statue =) 1314(.3) (g)	*A2*	*ISW* *Accept 1.3(143) kg from sight of 1314(.3) (g) or 1.314(3) (kg)* *Award A1 for* • *1182.7(2) or 1183 OR* • *131.5(8) or 131.6 or 132*
6(b) (Volume factor =) $\left(\frac{21.6}{12}\right)^3$ OR $\left(\frac{12}{21.6}\right)^3$ or 1.8^3 OR $0.555\ldots^3$ (=5.832) (=0.171…)	B1	or $\left(\frac{9}{5}\right)^3$ OR $\left(\frac{5}{9}\right)^3$
(Volume of bigger statue =) $150 \times \left(\frac{21.6}{12}\right)^3$ OR $150 \div \left(\frac{12}{21.6}\right)^3$	M1	Implies the previous B1
= 874(.8) or 875 (cm^3)	A1	

10.(a) (Berwyn = £) $0{\cdot}6x$ or equivalent	B1	CAO. Must be in terms of x e.g. award B0 for (£)0·6.
10.(b) Sight of (Carys = £)$0{\cdot}3x$ AND (Delyth = £)$0{\cdot}7x$ or equivalent	B1	Must be seen and in terms of x e.g. award B0 for (£)0·3 and (£)0·7.
$(£)0{\cdot}3x + (£)0{\cdot}4x$ or equivalent	B1	
$(£)0{\cdot}7x$ or Delyth or equivalent	B1	Final answer of $(£)0{\cdot}7x$ or Delyth must be clearly identified, convincing and from correct working. If no marks awarded or if only the first B1 awarded, then award an additional SC1 for one of the following: • (£)0·3 + (£)0·4 = (£)0·7 (or Delyth) • (£)30 + (£)40 = (£)70 (or Delyth) or equivalent • Carys + Aled = Delyth. Carys + Aled = $(£)0{\cdot}7x$ is awarded full marks provided the first B1 is awarded. If first B1 not awarded, award SC1 for sight of Carys + Aled = $(£)0{\cdot}7x$.

Unit 2: Higher Tier	Mark	Comments
1. (Number of 50p coins =) (£)19.20 ÷ (£)0.20 ÷ 8 × 5 or equivalent	M2	May be seen in stages. May be seen in any order. Award M1 for one of the following: • (£)19.20 ÷ 8 × 5 (=(£)12) • 96 (number of 20p coins (£)19.20 ÷ (£)0.20 or 19.20 × 5) • (£)19.20 ÷ (£)0.20 ÷ 8 (=12) • 'their derived number of 20p coins' ÷ 8 • 12 • (£)19.20 ÷ 8 • (£)2.4(0)
(Number of 50p coins =) 60	A1	CAO. May be implied in further working.
(Value of 50p coins = 60 × (£)0.5(0)=) (£)30(.00)	A1	FT 'their 60' × (£)0.5(0) **provided M2 awarded** and 'their 60' is rounded or truncated if required to a whole number of coins. May be implied in later working.
(Total value of coins = (£)19.20 + (£)30 =) (£)49.2(0)	A1	FT provided M2 or M1 awarded (£)19.2(0) + 'their 60' × (£)0.5(0). If no marks, award SC1 for sight of (8 × (£)0.2(0)=) (£)1.60 **and** (5 × (£)0.5(0)=) (£)2.50 or equivalent.
Organisation and Communication	OC1	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
Accuracy of writing	W1	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. 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