REVISE
.wales

F1.09 — Ratio in context

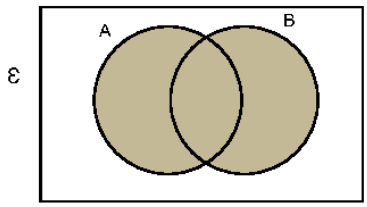
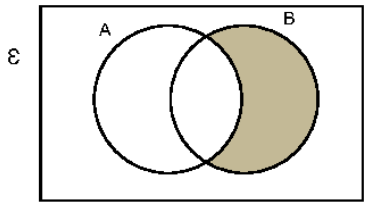
Mark schemes for the F1.09 question pack

Spec 1.4.11 — Unit 1

SOLUTIONS · 2025 SPECIFICATION

Mark schemes for the 15 questions in the corresponding revise.wales question pack (37 marks total). Sources: legacy WJEC GCSE papers, WJEC SAM, and custom-authored mark schemes. Pack layout © revise.wales.

12.(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
12.(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.

12.(a)(i)  	B1	
12.(a)(ii)  	B1	
12.(b) A valid statement. e.g. 'all multiples of 6 are also multiples of 3', 'because 3 goes into 6', '6 is a multiple of 3', '3 is a factor of 6'.	E1	Allow e.g. '(set) C is a subset of (set) A', 'it is a multiple of 3', ' 6, 12, ... are also multiples of 3'.
13. (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*
14.(a) 9 −7	B2	B1 for each.
14.(b) At least 6 correct plots and no incorrect plot. A smooth curve drawn through their plots.	P1 C1	FT 'their (−2,9)' and 'their (2,−7)' Allow ± '½ a small square'. FT 'their 8 plots'. OR a curve through the 6 given points and (−2,9) and (2,−7). Allow intention to pass through their plots. (± 1 small square horizontal or vertical.)
14.(c) Line y = 1 drawn −0·8 AND 4·8	B1 B1	Must be at least 2cm long. FT intersection of 'their curve' with 'their $y = 1$' only if exactly two points of intersection and $y \neq 0$. If curve drawn, but no line drawn, allow a FT from intersection of 'their curve' with line $y = 1$ only if exactly two points of intersection for B0B1. Allow ± '1 small square'.
15. 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).

(=) 16	A1	CAO
9. (1 share =) (£)16.8(0) ÷ 8 or equivalent (1 share =) (£)2.1(0) or equivalent (Total =) (£)18.9(0) or equivalent	 M1 A1 A1	*Allow answers in pounds or pence.* Award M1 A1 for sight of (£)2.1(0) : (£)16.8(0). If M1 A0, then FT 'their (£)2.1(0)' × 9 OR 'their (£)2.1(0)' + (£)16.8(0) If units given, then they must be correct e.g. award A1 for 1890 or 1890p but A0 for £1890.
9. Alternative method: *(Total =) (£)16.8(0) ÷ 8 × 9 or equivalent* *(Total =) (£)18.9(0)*	 *M2* *A1*	*Award M2 for complete method.*
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

Alternative method:			
19.	*(Total =) (£)16.80 ÷ 8 × 9 or equivalent*	*M2*	*Award M2 for complete method*
	(Total =) (£)18.9(0)	*A1*	

8. Identifying 12 possible combinations	B1	Award B1 for convincing identification of the 12 combinations, for example: • simply stating 12 • (3 × 4 =) 12 • showing all combinations 1+1, 1+2, etc. • all 12 'totals' • (2,3,3,4,4,4,5,5,5,6,6,7) shown with no extras • completed sample space drawn (3 by 4).
Identifying the 3 correct combinations that give a score of 6 or more (**2** and **4**, **3** and **3**, **3** and **4**)	B1	**Strict FT** only if a list of all possible scores previously stated.
(Probability of '6 or more' =) $\frac{3}{12}$ or equivalent ISW (but note comment for M1 below)	B1	A fraction with a denominator of 12 implies the first B1. Unsupported $\frac{3}{12}$ or equivalent implies previous B1B1. Probability may be implied in later working (e.g. 60 ÷ 12 = 5, 5 × 3 = 15). FT if a clear numerator and denominator can be identified from previous work. e.g. Possible scores 2, 3, 4 ,5, 6, 7 (B0) 2 scores of 6 or more (B1 FT) Probability = $\frac{2}{6}$ (B1 FT)
(Number of winning scores =) $\frac{3}{12}$ × 60 or equivalent	M1	FT 'their $\frac{3}{12}$' If 'their $\frac{3}{12}$' incorrectly simplified and used then award B0 previously.
= 15	A1	Must not come from incorrect working. Award M1 A0 for a final answer of ($\frac{3}{12}$ =) $\frac{15}{60}$ Note: using 'a winning score of 6' instead of 'a winning score of 6 or more' can be awarded a maximum of B1B0B1M1A1.

8. 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.

19.(b)	Use of $\frac{45}{9}$ or equivalent	M1	Sight of an appropriate 5 (or 40) implies M1.
	(£)40 AND (£)5	A1	Accept in either order.

7. $(4(.)40 \div 3.3) \times 9 \div 10$ $\left(=\frac{4(00)}{3} \times \frac{9}{10}\right)$ 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 $4 \times \frac{9}{10}$' $\div 3$

4(a)(i) $\frac{1}{3} \times 7200 \times \frac{90}{360}$ or $\frac{1}{3} \times 7200 \div 4$ or $2400 \div 4$ or $\frac{1}{3} \times 1800$	M2	M1 for any one of the following: • $7200 \times \frac{90}{360}$ (= 1800) • $7200 \div 4$ (= 1800) • (7200 ÷ 3 =) 2400
600 (Irish females)	A1	CAO
4(a)(ii) (Number of adult Welsh spectators) $7200 \times \frac{110}{360} \times 6 \div (6 + 5)$	M2	M1 for any one of the following: • $7200 \times \frac{110}{360}$ (=2200) • $7200 \times 6 \div (6 + 5)$ (=3927.2727….) • $110 \times 6 \div (6 + 5)$ (=60) • 'their number of Welsh spectators' × 6 ÷ (6 + 5)
1200	A2	A1 for any one of the following correctly evaluated: • $(7200 \times \frac{110}{360} =)$ 2200 • (7200 ÷ 360 =) 20 **and** (110 × 6 ÷ 11 =) 60 • 'their $7200 \times \frac{110}{360}$ ' × 6 ÷ 11 • 'their 7200 × 6 ÷ 11' × $\frac{110}{360}$ • 'their 110 × 6 ÷ 11' × 20 • 'their number of Welsh spectators' × 6 ÷ 11

Unit 1: Intermediate Tier	Mark	Comments
4(b) (Total of all entrance fees is) (Cycling entrance fees £) 2000 × 25 + (Cycling and athletics entrance fees £) 4000 × 40 + (Athletics entrance fee £) 1200 × 30 (£) 246 000	M2 A1	For the sum of the three appropriate products *(50 000 +)* *(160 000 +)* *(36 000)* M1 for any one of the following: • at least two appropriate products • one appropriate product in a sum of 3 products CAO
Organisation and communication 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 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 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.

Unit 1: Intermediate Tier	Mark	Comments
5.(a) A correct explanation given. e.g. '(equal) groups do not reach 20', '12 to 15 and 16 to 19 so no 20', ' to reach 20 the groups are not equal' 'it only goes up to 19' '20 not included'.	E1	Allow any unambiguous explanation. Do not accept: 'because there's only 20 attempts'. Award E1 if incorrect values are given in the table but correct explanation given.
5.(b) (0 to 6) 7 to **13** **14** to 20	B1	Answer in table takes precedence.
5.(c)(i) $\frac{17}{100}$ or equivalent ISW	B1	B0 for incorrect notation e.g. '17 in 100', '17 out of 100', '17:100' etc.
5.(c)(ii) A correct explanation given e.g. 'the eleven competitors might have all scored 20', 'only one of them (might have) scored 19', 'we don't know how many competitors scored 19' 'the probability of scoring 18, 19 or 20 is $\frac{11}{100}$' 'the 11 could include (the scores of) 18 and 20' 'it doesn't tell you the exact score of all 11 competitors'	E1	Allow any unambiguous explanation. E0 for mixing number of competitors and number of points scored. e.g. '11 points were scored for 18, 19, 20' '18, 19 or 20 people could have scored 11'.

17.(b)	(£)48 ÷ 8 or (£)6	M1	Sight of an appropriate 6 (or 42) implies M1.
	(£)6 AND (£)42 ISW	A1	Allow in any order. Allow (£)6 : (£)42 or (£)42 : (£)6.

20.(a) (Berwyn = £) $0{\cdot}6x$ or equivalent	B1	CAO. Must be in terms of x e.g. award B0 for (£)0·6.
20.(b) Sight of (Carys = £)$0{\cdot}3x$ AND (Delyth = £)$0{\cdot}7x$ or equivalent (£)$0{\cdot}3x + $ (£)$0{\cdot}4x$ or equivalent (£)$0{\cdot}7x$ or Delyth or equivalent	B1 B1 B1	Must be seen and in terms of x e.g. award B0 for (£)0·3 and (£)0·7. 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 = (£)$0{\cdot}7x$.

4.(a)	Bethan = **14** (years old) Andrew = **21** (years old) Richard = **24** (years old)	B2	For B1, check for the required conditions being met and not the individual numbers. *Required conditions (or equivalent) are:* $B + A + R = 59$ $A - B = 7$ $R - A = 3$ $R - B = 10$ Award B1 for one of the following: • two conditions correct • 14, 21, 24 allocated to the incorrect people e.g. **B** = 14, **A** = 24 and **R** = 21 (correct answer not seen in working space). A condition must be met using non-negative ages, otherwise B0. Values on the answer lines take precedence. However, award B2 for one of the following: • the answer lines are left blank and the correct answers (correct ages allocated to the correct people) are seen in the working space • the correct answers (correct ages allocated to the correct people) are seen in the working space, but ages allocated to the incorrect people on the answer lines.
4.(b)(i)	27 : 30 9 : 10	B1 B1	Answer line takes precedence. Must be in a ratio for B1. Award B1 for one of the following: • simplifying 27 : 'their 30' correctly evaluated • an answer of 7 : 8 (from 21 : 24) • 10 : 9 (unsupported or from 30 : 27). Award B1 B1 for an unsupported answer of 9 : 10.

4.(b)(ii) Valid explanation e.g. "they are not the same age" "Andrew is younger (so they can't be the same)" "Richard is older (so they can't be the same)" "Richard is 3 years older" "They'll always be different" "(there's a) difference in their ages" "their ages are not equal" "they are 3 years apart" "1:1 means they are the same age" "there's a gap (in their ages)" "they were born different dates"	E1	Do not allow FT from 4(b)(i). Do not allow: • further spurious **incorrect** comments e.g. "they are 3 years apart, so their ratios have to add to 3" • "Andrew will always be older" • "Because Andrew is 7 years older".

5(a) 40 × 1(.)75 ÷ 5 or 1(.)75 × 8 or equivalent	M2	May be shown in stages M1 for any of the following: • 40 ÷ 5 • sight of an appropriate 8 • 40 × 1(.)75 (= 70 or 7000) • 1(.)75 ÷ 5 (= 0.35 or 35)
(£)14 or 1400(p)	A1	If units are given they must be correct

5(b) Sight of 280 ÷ 4 or 3 × 280 ÷ 4 Oil 210 (ml) Vinegar 70 (ml)	M1 A1 A1	 Answer space takes precedence Answer space takes precedence If M1 awarded but 210 (ml) and 70 (ml) are reversed, allow A0 A1 If M1 awarded with A0, A0 due to incorrect evaluation of 280 ÷ 4 then also award SC1 if • 'their 210' + 'their 70' = 280, or • 'their 210' = 3 × 'their 70'
5(c) (Sells for a total of) 40 × (0.)90 OR (cost for 1 portion) 2400 ÷ 40 or 24 ÷ 40 (Sells for a total of 40 × (0.)90) (£)36 or 3600(p) OR (cost for 1 portion 24 ÷ 40) 60 (p) or (£)0.60 (% profit) $\frac{36-24}{24}$ (×100) or $\frac{(0.)90-(0.)60}{(0.)60}$ (×100) or $\frac{36}{24}$ (×100) – 1 (×100) or $\frac{(0.)90}{(0.)60}$ – 1 (×100) or equivalent 50 (%)	M1 A1 m1 A1	 If units are given they must be correct Must be consistent place value, i.e. use of £ or p FT correct use of 'their 40 × (0.)90' or 'their 24 ÷ 40' Accept a correct answer provided not from incorrect working, may be from reverse calculations or unsupported

10(a) $0.03 \times 4000 + 4000$ or 1.03×4000 (= £4120) or equivalent	M1	Allow for sight of one of the following: • 4120 (irrespective of labelling) • 4240 (simple interest)
$0.03 \times 4120 + 4120$ or 1.03×4120 or equivalent	M1	FT 'their 4120' (the mark is for the method) (= £123.6(0) + £4120)
(£)4243.6(0)	A1	CAO. Answer space takes precedence if completed, otherwise mark final answer for the amount If no marks, award SC1 for (£)3763.6(0) (from depreciation)
10(a) <u>Alternative method</u> *Sight of $1.03^2 \times 4000$* *1.0609×4000* *(£)4243.6(0)*	*M1* *A1* *A1*	*CAO. Answer space takes precedence if completed, otherwise mark final answer for the amount* *If no marks, award SC1 for (£)3763.6(0) (from depreciation)*
10(b)(i) $100 \times 42 \div (100 + 40)$ or $42 \div 1.4$ or equivalent	M1	
(£) 30	A1	CAO. Answer space takes precedence Accept a correct answer from trial and improvement

10(b)(ii) (Volume of gold = mass ÷ density =)
$6 \times 10^{-3} \times 1000 \div 20$
or $6 \div 20$
or $6 \times 10^{-3} \div (20 \div 1000)$
or $6 \times 10^{-3} \div 0.02$
or equivalent
	M2	Must be dimensionally correct
		
		M1 for any one of the following:
		• sight of $6 \times 10^{-3} \times 1000$ (= 6 g)
		• sight of $20 \div 1000$ (= 0.02 kg/cm^3)
		• method with incorrect place value, 'their mass' ÷ 'their density' provided that
		  • the only non-zero digit in 'their mass' = 6 <u>and</u>
		  • the only non-zero digit in 'their density' = 2
		e.g. $6 \times 10^{-3} \div 20$, $6 \times 10^{-3} \div 0.2$, $600 \div 20$, $6000 \div 20$

0.3 (cm^3) or $\frac{3}{10}$ (cm^3)	A1	CAO, allowing 3×10^{-1} (cm^3)

11.

INPUT	OUTPUT
−7	**−15**
−24	−100
2·5	**32·5**
n	**$5(n+4)$**

B1	Mark final answer in table. If answers are not given in table, they must be clearly identified in the working space.
B1	
B1	
B2	Must include brackets or be fully simplified for B2. Award B2 for one of the following (or equivalent) as a final answer: • $5(n+4)$ • $5(4+n)$ • $5n+20$ • $5\times(n+4)$ • $(n+4)5$ • $(n+4)\times 5$. Award B1 for one of the following (or equivalent) as a final answer: • $n+4\times 5$ • $5\times n+4$ • sight of correct expression with incorrect final answer (e.g. $5(n+4)=5n+4$ or $5(n+4)=n$) • … $n+20$ • $5n+$ …

End of solutions