REVISE

.wales

F2.08 — Expanding single brackets & factorising

Mark schemes for the F2.08 question pack

Spec 2.1.7, 2.1.13 — Unit 2

SOLUTIONS · 2025 SPECIFICATION

Mark schemes for the 14 questions in the corresponding revise.wales question pack (25 marks total). Sources: legacy WJEC GCSE papers, WJEC SAM, and custom-authored mark schemes.

				Correct answer of 1/3 gains B1 regardless.
18.(a)	$x(x^2 - 5)$		B1	
18.(b)	$2x^2 + 5x - 12$		B2	B1 for $2x^2 + kx - 12$ OR $2x^2 + 5x + k$
18.(c)	$(x - 7)(x + 4)$ ISW		B2	B1 for $(x \quad 7)(x \quad 4)$

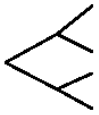
			Penalise incorrect notation (e.g. '19 in 30') −1.
12.(a)	$5x^2 - 2x - 3x^2 + 6x - 21$	B2	B1 for sight of $5x^2 - 2x$. B1 for sight of $-3x^2 + 6x - 21$. Brackets must be removed. Allow both of the above B marks even if not part of a single expression. *FT for B2 if at least two x^2 terms AND at least two x terms to be simplified.* *FT for B1 if at least two x^2 terms OR at least two x terms to be simplified.*
	$= 2x^2 + 4x - 21$	B2	If B2 not awarded, allow B1 for correct collection of 'x^2 terms' ($2x^2$) OR B1 for correct collection of 'x terms' (+4x). This 2nd B2 (or B1) is for their **final** answer. Any compensating errors leading to a 'correct' answer is B0. Penalise −1 for any attempt to equate their expression to zero (and attempting to solve) OR Incorrectly factorising.
12.(b)	$22 - f = 3 \times 6$ or equivalent. $22 - 18 = f$ OR $-f = 18 - 22$ $f = 4$	M1 A1 A1	 C.A.O. Accept 4 = f. M1A1A0 for $-f = -4$. Mark final answer. Allow all 3 marks for $\frac{22-4}{3} = 6$ with no further work. Allow 2 marks for $\frac{22-4}{3} = 6$ followed by '$f \neq 4$. If no marks gained. Allow SC1 for an unsupported $f = -4$.

8.(a)	a = 52° b = 52° c = 64°	B1 B1 B1	 OR FT b = 'their a'.
8.(b)	x = 64°	B1	OR FT x = 'their c'.
	y = 64°	B1	OR FT y = 180 – 52 – 'their x'. OR FT y = 180 – 64 – 'their a' OR FT y = 180 – 'their a' – 'their c' OR FT y = 180 – 'their b' – 'their c'
	Isosceles.	B1	C.A.O. Dependent on values given for <u>both</u> x and y AND two equal angles in triangle LMN AND x + y = 128.

5. (18% of £256 =) $0{\cdot}18 \times 256$ $= (£)46.08$	M1 A1	Allow (£)46.10
(Larger share =) $\frac{2 \times 46{\cdot}08}{3}$	M1	FT 'their stated 18%'.
$= (£)30.72$	A1	If M0 allow SC1 for sight of (£)15.36
(To the nearest 10p =) (£)30.7(0)	B1	FT 'their larger share' (not 'their 18%') and only if rounding required.
5. Alternative method 1 *(Larger share of £256 =)* $\frac{2 \times 256}{3}$	*M1*	
$=(£)170.66(..)$	*A1*	*Allow (£)170.70* *If M0 allow SC1 for sight of (£)85.33.*
(18% of £170.66 =) 0·18 × 170.66 *= (£)30.72*	*M1* *A1*	*FT 'their stated larger share'.*
(To the nearest 10p =) (£)30.7(0)	*B1*	*FT 'their 18%' (not 'their larger share') and only if rounding required.*
5. Alternative method 2 *(Larger share of 18% =)* $\frac{2 \times 18}{3}$	*M1*	
= 12(%)	*A1*	*If M0 allow SC1 for sight of 6(%).*
(12% of £256 =) 0·12 × 256 *= (£)30.72*	*M1* *A1*	*FT 'their derived larger %'.*
(To the nearest 10p =) (£)30.7(0)	*B1*	*FT 'their amount' only if rounding required.*
5.OCW 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

	−1(°C)	B1	
2.	Showing (7%), 60% and 30% OR 7/100 , 60/100 and 30/100 OR 0·07, 0·6 and (0·3) OR three correct calculations for a common amount.	B2	B2 for all correct %, OR all correct fractions with a common denominator, OR all correct decimals OR correct work using a common amount, OR a valid combination that allows full comparison. B1 for one correct conversion that still allows a **full comparison**. (i.e. allow one error in attempt at a **common format**.)
	7% 0·3 3/5 in order	B1	Allow any unambiguous indication (e.g. 'converted' values.) **Strict FT** of 'their work' if at least B1 gained. Correct answer, with no other marks awarded, gains

11. −4(°C) Up 3(°C) −1(°C)	B1 B1 B1	Allow +3 (but not 3) for this B1.

16.(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)
16(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.
17.(a) Correct framework 	B1	
Suitable labelling on both 1st pair of branches AND on both of at least one pair of 2nd set of branches. e.g. 'Car', 'No car', 'Before 8', 'After 8'. OR Titles of 'Car' and 'Before 8' with branch endings of 'Yes' and 'No'.	B1	Accept any unambiguous wording.
Correct probabilities on first pair of branches 0·7 AND 0·3 (for 'Car', 'No car') OR 0·4 AND 0·6 (for 'Before 8', 'After 8')	B1	Must be consistent with their labelling. Allow this B1 if no headings given, unless contradicted by, or inconsistent with, further labelling.
Correct probabilities on second two sets of branches 0·4 AND 0·6 correctly placed (following 0·7 and 0·3) OR 0·7 AND 0·3 correctly placed (following 0·4 and 0·6)	B1	Allow this B1 if no headings given, unless contradicted by, or inconsistent with, further labelling. Allow this B1 if only shown on one set of branches. Provided not contradicted on the other set of branches.
17.(b) $0·7 \times 0·4$ or equivalent. $= 0·28$ or equivalent.	M1 A1	No FT. M1A0 for a final answer of 0·28%. Mark final answer.
18.(a) PA = 12(cm) AND correct theorem given, e.g. 'tangents from an external point are equal in length'.	E1	Must use the words 'tangents' AND 'equal (identical / same)'. Do not accept e.g. 'PA = PB'. (E0) Accept alternative correct answers.
18.(b) PÂO = 90(°) AND correct theorem given, e.g. 'the tangent at any point on a circle is perpendicular to the radius at that point'.	E1	Must use the words 'tangent' AND 'radius (diameter)' Allow e.g. 'radius and tangent meet at 90'. (E1) Do not accept e.g. 'PA and OA meet at 90'. (E0)
18.(c) (Area PAOB =) $2 \times \frac{12 \times 4}{2}$ or equivalent. $= 48 (cm^2)$	M1 A1	OR FT 'their PA' × 4 / 2 + 12 × 4 / 2 M0 for 48×2 or $12 \times 4 \times 2$ (= 96) An unsupported final answer of 48 gains both marks. If no marks gained allow SC1 for sight of 24(cm^2) OR a correct evaluation of ('their PA' × 4) / 2.
19.(a) $y = 2·5x + 3$	B1	
19.(b) $y = 3x - 5$	B1	
19.(c) Line D	B1	

10. (-2, 1)	B2	B1 for: • one correct coordinate, or • a clear indication of the correct position of the midpoint, or • the correct coordinates reversed.
11.(a) 7x =14 x = 2	B1 B1	FT from 7x = k. Accept x = k/7 (but, if on FT k is a multiple of 7, final answer must be given as a whole number.) B1B0 for 'x = 14/7' An evaluated FT for k ÷ 7 must be rounded or truncated to at least 2dp. e.g. 7x = 8 (B0) followed by, x = 8 ÷ 7 (B0) x = 8/7 (B1), x = $1^{1}/_{7}$ (B1), x = 1·14 (B1), x = 1·1 (B0) Mark final answer. Allow 2 marks for embedded answer BUT only 1 mark if contradicted by x ≠ 2.
W 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
11.(b) 10	B2	C.A.O. B1 for sight of 17·4 OR −7·4 Do not accept 17·4f nor −7·4g Do not treat the use of 3·7 for −3·7 as a misread.
12. (Total number of paper clips =) 200 × 440 × n where 320 ≤ n ≤ 330. Correct evaluation. (To the nearest ten million) 30 000 000 (paper clips)	M2 A1 B1	M1 for 200 × n OR 440 × n where 320 ≤ n ≤ 330. Allow use of 400 or 450 for 440. *Note* *If n taken to be 225 or 425 treat as a misread and allow M2 but penalise −1 from any further A1, B1 marks gained.* CAO from their numbers if M2 gained. (n=320 gives 28 160 000, n=325 gives 28 600 000, n=330 gives 29 040 000.) FT 'their evaluation' if greater than 5 million. A final answer of 30 million implies M2A1B1. Allow M2A0B0 for an unsupported final answer of 28 000 000 or 29 000 000.
13.(a) 3	B1	If no answer seen, check table.
13.(b) 15	B1	If no answer seen, check table.
14.(a) (0)7:45 23 (March)	B2	B1 for each. B0 for (0)7:45 p.m.
14.(b) Sight of 5 miles ≡ 8 km or equivalent. Shows 15 miles to be 24 km AND a valid statement e.g. 'yes (it's nearly 25 km'), 'no (it's only 24 km').	B1 B1	Allow a more accurate conversion (5 miles ≡ 8 to 8·05 km). Do not accept 3 miles ≡ 5 km '15 miles is 24 km' with no statement is B1B0. Accept a one word decision of 'Yes' or 'No' as a statement.
Alternative method *Sight of 8 km ≡ 5 miles or equivalent.* *Shows 25 km to be 15·625 miles AND a valid statement e.g. 'yes (it's just over 15 miles'), 'no (it's over 15 miles)'.*	*B1* *B1*	*Allow a more accurate conversion (8 km ≡ 4·97 to 5 miles).* *Do not accept 5 km ≡ 3 miles* *'25 km is 15·625 miles' with no statement is B1B0.* *Accept a one word decision of 'Yes' or 'No' as a statement.*

13. $5x - 17 + 2x + 9 + x + 20 = 180$ $8x = 168$ $x = 21$	M1 A1 A1	 F.T. from ax = b. Allow all 3 marks for x = 21.
Substituting x = 21 into at least one expression. (5x – 17 =) 88(°) (2x + 9 =) 51(°) (x + 20 =) 41(°) (So not a right-angled triangle)	M1 A1	If $x \neq 21$ FT 'their derived value of x'. F.T. for this A1 if $x \geq 4$. Any **two** of these expressions correctly evaluated with no incorrect evaluation, provided the sum of the two found is > 90. (statement not required). *Note* *If further work indicates that the values found are not treated as angles (e.g. showing $51^2 + 41^2 \neq 88^2$) then award final M0A0.*
Alternative method *5x – 17 = 90 OR 2x + 9 = 90 OR x + 20 = 90* *x = 21·4 AND x = 40·5 AND x = 70*	*M1* *A2*	 *Award A1 for any one of these:* *x = 21·4 OR x = 40·5 OR x = 70*
Then verifying: *If x = 21·4: 5x – 17 + 2x + 9 + x + 20 = 183.2* *AND* *If x = 40·5: 5x – 17 + 2x + 9 + x + 20 = 336* *AND* *If x = 70: 5x – 17 + 2x + 9 + x + 20 = 572* *(So not a right-angled triangle)*	*A2*	*Award A1 for any one of these:* *If x = 21·4: 5x – 17 + 2x + 9 + x + 20 = 183.2* *OR* *If x = 40·5: 5x – 17 + 2x + 9 + x + 20 = 336* *OR* *If x = 70: 5x – 17 + 2x + 9 + x + 20 = 572*
14. (AB =) 13·8 × cos 41 OR 13·8 × sin 49 = 10·4(…) (cm)	M2 A1	M1 for $\cos 41 = \frac{AB}{13·8}$ OR $\sin 49 = \frac{AB}{13·8}$
Alternative method: ***Correct** use of 'two-step' method.* *(AB) = 10·4(…)(cm)*	*M2* *A1*	*A partial trigonometric method is M0.* *Accept an answer that rounds to 10·4(cm)*
15.a(i) $x^3 + 7x$	B2	B1 for sight of x^3 + ……. OR ……+ 7x. Do not accept x×x×x + x×7 etc. Mark final answer.
15(a)(ii) $3x^2 - 4x - 15x + 20$ $3x^2 - 19x + 20$	B1 B1	Must be an expression. FT from an error in only one term (out of 4) only if of the form $ax^2 \pm bx \pm cx \pm d$.
15.(b)(i) $5n - 27 < n$ OR $n > 5n - 27$	B2	Allow B2 for an equivalent correct inequality. e.g. $4n - 27 < 0$. B1 if ≤ or ≥ used in a 'correct' inequality. OR B1 for $5n - 27 > n$ OR $n < 5n - 27$
15.(b)(ii) $4n < 27$ $n < \frac{27}{4}$ (Greatest number of clocks =) 6	B1 B1 B1	FT 'their inequality' if of equivalent difficulty. FT only from an < b OR an ≤ b OR an > b OR an ≥ b. FT only from n < c where c is positive OR n ≤ d where d is positive and not an integer An answer of 6 gains all 3 marks.

5. length = 2 × width	B1	**Answer lines take precedence** Note: correct answer 5·47…(cm) ≤ width ≤ 6·66..(cm) Must be in the correct order for B1.
Area = width × length	M1	M1 for **using** the correct method (not for stating the formula). FT 'their width' × 'their length'.
Area correctly evaluated AND > 60 (cm^2)	A1	
Perimeter = 2 × (width + length) or equivalent	M1	M1 for **using** the correct method (not for stating the formula). FT 2 × ('their width' + 'their length').
Perimeter correctly evaluated AND < 40 (cm)	A1	If answer space is left blank: • award full marks if correct length, width, area and perimeter clearly identified in working space or • penalise -1 if correct length, width, area and perimeter not clearly identified in working space. Penalise -1 if area and perimeter are reversed on the answer line but correct area and perimeter clearly identified in working space. Note: (W and L need not be whole numbers)

W	L	Area	Perimeter
6	12	72	36

16. Sight of 4(hr) 35(min) AND 2(hr) 45(min) OR Sight of 275(min) AND 165(min) OR sight of 2 × 5(min) in an appropriate calculation.	B1	Allow incorrect notation for time (e.g. 4:35 for 4(hr) 35(min)).
Valid method e.g. • 4(hr) 35(min) + 2(hr) 45(min)(=6(hr) 80(min)) 275(min) + 165(min) (= 440 (min)) • 6 (hr) 90 (min) – 10 (min) • 7 (hr) 30 (min) – 10 (min) • 4(hr) 40(min) + 2(hr) 50(min) – 10 (min) • 280 (min) + 170 (min) – 10(min)	M1	If B0, FT provided unambiguously chosen: '4h 30m ≤ t_1 < 4h 40m' and '2h 40m ≤ t_2 < 2h 50m' OR '270m ≤ t_1 < 280m' and '160m ≤ t_2 < 170m' Allow incorrect notation for time (e.g. 4:35 for 4(hr) 35(min)).
7 (hr) 20 (min)	A1	CAO. If units are given they must be correct. Award B1M1A0 for a final answer of 6hrs 80min, 6:80 or 7:20.

10. (a)	3·5 pints	B1	
10.(b)	20 miles	B1	

15. Identifying or implying that there are 16 possible correct combinations (e.g 2 × 6) or products (e.g.12)	B1	Award B1 for • simply stating 16 • (4 × 4 =)16 • **completed** sample space (need not be correct) • sight of $\frac{1}{4}\times\frac{1}{4}$ • sight of 16 in a denominator.
Identifies <u>all</u> possible combinations (e.g 2 × 6) or products (e.g 12) that are a factor of 36 *1 × 6 = 6, 1 × 9 = 9, 2 × 6 = 12* *2 × 9 = 18, 3 × 6 = 18, 4 × 9 = 36*	B2	FT 'their 16 possible correct products'. If products not used (e.g 2 + 6 = 8), do not award B2 or B1. Award B2 for **clearly identifying** one of the following: • the **6** (and no more) combinations 1 × 6, 2 × 9, etc that form factors of 36 that can be achieved by the two spinners • the **6** (and no more) products of factors of 36 that can be achieved by the two spinners: 6, 9, 12, **18, 18**, 36 • sight of $6\times\frac{1}{4}\times\frac{1}{4}$ or equivalent. Award B1 for **clearly identifying** one of the following: • at least 4 combinations that are factors of 36 • at least 4 products of factors of 36 that can be achieved by the two spinners: 6, 9, 12, 18, 36 • all of the factors of 36 (1,2,3,4,6,9,12,18,36).
(Probability factor of 36 =) $\frac{6}{16}$ or equivalent. ISW	B1	FT 'their list' only if at least 12 combinations or products given with **at least two factors of 36** that can be achieved by the two spinners **clearly identified.** Penalise, −1, any incorrect notation e.g. '6 out of 16'. Unsupported $\frac{6}{16}$ or $\frac{3}{8}$ or equivalent gains B1 B2 B1.

Unit 1: Intermediate Tier		
1. <table><tr><th>INPUT</th><th>OUTPUT</th></tr><tr><td>−7</td><td>−15</td></tr><tr><td>−24</td><td>−100</td></tr><tr><td>2·5</td><td>32·5</td></tr><tr><td>n</td><td>$5(n+4)$</td></tr></table>	B1 B1 B1 B2	Mark final answer in table. If answers are not given in table, they must be clearly identified in the working space. 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