REVISE
.wales

1.17 — Time, dates & unit conversions

Mark schemes for the 1.17 question pack

Spec 1.9.1, 1.9.2, 1.9.3 — Unit 1

SOLUTIONS · 2025 SPECIFICATION

Mark schemes for the 7 questions in the corresponding revise.wales question pack (29 marks total). Sources: legacy WJEC GCSE papers, WJEC SAM, and custom-authored mark schemes. Pack layout © revise.wales.

			Ignore 'recurring dot'.
2.(a)	48°	B1	
2.(b)	East	B1	
2.(c)	288°	B1	

4. Correct construction <u>method</u> for perpendicular bisector with line drawn. Correct construction <u>method</u> for 60° at point A. Correct construction <u>method</u> for bisecting an angle with line drawn. Point P clearly identified	 B1 B1 B1 B1	*Correct construction arcs must be seen for the first three B1 marks.* Two pairs of intersecting arcs (centres at A and B). Allow if drawn at point B. Allow B1 for correct method (tolerance will be penalised with final B0). FT 'their angle of 60°' drawn at point A or point B. C.A.O. within tolerance. Intersecting lines alone with no indication that this is point P is <u>not sufficient</u> for this B1. Do not penalise if both possible positions shown. Final B1 may be awarded after B0B0B0.
<u>4. Alternative method</u> *Correct construction method for 60° at point A (or B).* *Correct construction method for bisecting the angle at A (or B) with line drawn.* *Repeating the above two stages at B (or A)* *Point P clearly identified*	 *B1* *B1* *B1* *B1*	*Correct construction arcs must be seen for the first three B1 marks* *Allow B1 for correct method (tolerance will be penalised with final B0).* *C.A.O. within tolerance.* *Intersecting lines alone with no indication that this is point P is <u>not sufficient</u> for this B1.* *Do not penalise if both possible positions shown.* *Final B1 may be awarded after B0B0B0.*

3(a) (Difference 60 million – 41 000 000 =) 19 000 000 or 19 million (Underspend) $\frac{19\,000\,000}{60\,000\,000}$ (× 100) or equivalent 31.67(%)	B1 M1 A1	May be implied in further working Allow 19 m(il) FT 'their 60 million – 41 000 000' including if a place value error made CAO (must be 2 d.p.) Answer space takes precedence
3(a) Alternative method *(Underspend)* *(100 -)* $\frac{41\,000\,000}{60\,000\,000}$ *(× 100) or equivalent* *31.67(%)*	*M1* *A2*	*Allow place value error* *CAO (must be 2 d.p.)* *Answer space takes precedence* *A1 for 31.6(6…%), 31.7(%), 32(%) or 68.33(%)*
3(b) 4×10^6	B1	

3(c) (Change to $) 350 × 1.25 ($)437.5(0)	 M1 A1	*Do not penalise slips in giving incorrect use of £ for $*
(Only $10 and $50 notes available so he can buy) ($)430	A1	FT 'their ($)437.5(0)' (provided not a multiple of 10) rounded down to nearest multiple of 10 Accept stated or implied as ($)7.50 can't be converted ($)430 implies previous M1 A1, provided not from incorrect working
(Fewest number of notes making up $430) **8** $50 (notes) and **3** $10 (notes)	A1	FT 'their $430' provided it is a multiple of 10 (and provided M1 previously awarded) Must be fewest number of notes, that may be listed Sight of correct number of notes with no incorrect working implies previous A1, unless contradicted
(Cost in £ to buy $430 is) 430 ÷ 1.25 or 350 – 7.5(0) ÷ 1.25 (= 350 – 6) (£)344	M1 A1	FT 'their whole number multiple of $10' ÷ 1.25 Ignore attempt at any further calculation if 430 ÷ 1.25 seen Must be <(£)350 **and** depends on M1 M1 previously awarded Mark final answer If final M0 A0, then award SC1 for (£) 6 (left) or similar on FT, provided not from incorrect or inappropriate working
3(c) Alternative method *£40 = $50 and £8 = $10* *8 $50 notes, 3 $10 notes* *(Cost to buy £350 is)* 8 × 40 + 3 × 8 *(£)344*	*M1* *A3* *M1* *A1*	*A2 for 8 $50 notes* ***and** sight of 350 – 8 × 40 or equivalent* *OR* *A1 for 8 $50 notes*
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.

4(a)(i) 440 × 48 ÷ 2.2 9600 (kg)	M1 A1	May be seen in stages Mark final answer Allow answers in the inclusive range 9588 to 9601 from premature approximation Answer space takes precedence
4(a)(ii) 230 000 000 000	B1	
4(b) (Area) 2.47 × 40000 ÷ 10000 or equivalent 9.88 (acres) (Density of trees) 615 ÷ 9.88 62(.2...trees per acre) (>60)	 M1 A1 m1 A1	**Throughout, if 4 marks are awarded, penalise -1 if conclusion 'Yes' is not indicated** **On FT the conclusion may be different to 'Yes'** May be implied in further working Allow 9.8 (acres), 9.9 (acres) or 10 (acres) Depends on M1 m1 previously awarded
4(b) Alternative method 1 *(Area) 2.47 × 40 000 ÷ 10 000 or equivalent* *9.88 (acres)* *(Maximum number of trees) 9.88 × 60* *592(.8) (trees) or 593 (trees) (< 615)*	*M1* *A1* *m1* *A1*	*May be implied in further working* *Allow 9.8 (acres), 9.9 (acres) or 10 (acres)* *Depends on M1 m1 previously awarded* *Allow suitable rounding, e.g. 590 or 600*
4(b) Alternative method 2 *(Area) 2.47 × 40 000 ÷ 10 000 or equivalent* *9.88 (acres)* *(Minimum area) 615 ÷ 60* *10.25 (acres) (> 9.88)*	*M1* *A1* *M1* *A1*	*May be implied in further working* *Allow 9.8 (acres), 9.9 (acres) or 10 (acres)* *Do not allow embedded in further working* *Allow rounded to 10 (acres) provided 'their area' ($9.88m^2$) has not been rounded to 10*
4(b) Alternative method 3 *(Minimum area) 615 ÷ 60* *10.25 (acres)* *(Convert to m^2) 10000 × 10.25 ÷ 2.47* *41497(.97 m^2) or 41498(m^2) (>40000)*	*M1* *A1* *m1* *A1*	*May be implied in further working* *Allow 10 (acres)* *Depends on M1 m1 previously awarded* *Accept suitable rounding, e.g. 41000 or 41500*
4(b) Alternative method 4 *(Trees in 2.47 acres) 615 ÷ (40 000 ÷ 10 000) or equivalent* *153.75 (trees)* *(Density of trees) 153.75 ÷ 2.47* *62(.2...trees per acre) (> 60)*	*M1* *A1* *m1* *A1*	*May be implied in further working* *Allow 153, 153.8 or 154 (trees)* *Depends on M1 m1 previously awarded*
4(b) Alternative method 5 *(Forest area per tree) 40 000 ÷ 615* *65(.0406.. m^2)* *(Fire risk, area per tree) 10 000 ÷ (60 × 2.47)* *67(.476...m^2) (> 65)*	*M1* *A1* *M1* *A1*	*Do not allow embedded in further working*

4(c)(i) (Height of the tree =) $21 \times \tan 39$ 17.(…. m)	M2 A1	*OR alternative full method* M1 for $\tan 39 = \frac{\text{height of tree}}{21}$ CAO
4(c)(i) Alternative method 1 *Hypotenuse = 21/cos39* *(= 27.02…)* ***AND** Height* = $\sqrt{(27(.02)^2 - 21^2)}$ 16.9(7…) (m) to 17.(0..m)	*M2* *A1*	*M1 for Hypotenuse = 21/cos39* *(= 27.02…)* ***AND** Height*$^2 = 27(.02)^2 - 21^2$ *CAO*
4(c)(i) Alternative method 2 *(Angle of elevation)* $\tan^{-1}\frac{17}{21}$ *38.9(9…°) or 39(°)*	*M2* *A1*	*M1 tan (elevation)* $= \frac{17}{21}$ *CAO*
4(c)(i) Alternative method 3 *(Horizontal distance)* $\frac{17}{\tan 39}$ *20.9(98…m) or 21m*	*M2* *A1*	*M1 for* $\tan 39 = \frac{17}{\text{distance}}$ *CAO*
4(c)(ii) diameter $= \frac{1.75}{\pi}$ or (radius =) $\frac{1.75}{2 \times \pi}$ (Area of cross section =) $\pi \times (1.75 \div 2\pi)^2$ $\times 17 \div 2$ (Volume) answer in the range 2.07 (m^3) to 2.15 (m^3)	M2 M1 m1 A1	M1 for any one of the following: • $1.75 = \pi \times$ diameter • $1.75 = 2 \times \pi \times$ radius (Note: radius = $\frac{7}{8\pi}$ m, radius ≈ 0.28m) FT for 'their derived radius' provided it is from a calculation involving the use of π (Note: area of cross section = $\frac{49}{64\pi}$ m^2 area of cross section ≈ 0.24 m^2) FT provided previous M1 awarded CAO, accept an answer of 2 (m^3) from correct working without sight of premature approximation leading to an answer outside the range

8. 70 $\times \left(\frac{1}{2}+\frac{1}{10}\right)$ or $\times \left(\frac{28}{56}+\frac{1}{10}\right)$ or $\times 0.6$	M2	M2 and M1 can be performed in either order, but have to come from starting with 70 May be embedded within incorrect work M1 for: • $\times \left(\frac{1}{2}+\cdots\right)$ or $\times \left(\frac{28}{56}+\cdots\right)$ OR • $\times \left(\ldots+\frac{1}{10}\right)$
$\div 1.75$ or $\times \frac{4}{7}$ or equivalent	M1	Accept use of $\div$ (1.748 to 1.76) or $\times$ (0.568 to 0.572)
$\times 11$	m1	FT from at least one M1 previously awarded
$= 264$ (miles)	A2	CAO A1 for: • sight of 42 (pints) or • sight of 24 (litres) or • a correct answer on FT only from an error in converting to litres Allow (for possibly all marks) one rounding/truncation step from using an accepted conversion from pints to litres e.g. use of × 0.57 for the conversion to litres 42 × 0.57 = 23.94 (possibly rounded to 24) or 42 × 0.57 × 11 = 263.34 (possibly rounded to 263)
8. Alternative method: *11* *÷ 1.75 or $\times \frac{4}{7}$ or equivalent*	*M1*	*M1 and M2 can be performed in either order, but have to come from starting with 11* *Accept use of ÷ (1.748 to 1.76) or × (0.568 to 0.572)*
$\times \left(\frac{1}{2}+\frac{1}{10}\right)$ or $\times \left(\frac{28}{56}+\frac{1}{10}\right)$ or $\times 0.6$	*M2*	*May be embedded within incorrect work* *M1 for:* • $\times \left(\frac{1}{2}+\cdots\right)$ or $\times \left(\frac{28}{56}+\cdots\right)$ OR • $\times \left(\ldots+\frac{1}{10}\right)$
× 70	*m1*	*FT from at least one M1 previously awarded*
= 264 (miles)	*A2*	*CAO* *A1 for:* • *sight of $\frac{44}{7}$ (miles per pint) or equivalent* • a correct answer on FT only from an error in converting 11 miles per litre into miles per pint *Allow (for possibly all marks) one rounding/truncation step from using an accepted conversion from pints to litres* *e.g. use of × 0.57 for the conversion to litres* *11 × 0.57 = 6.27 (truncated/rounded to 6.2 or 6.3, **but not 6**) or* *11 × 0.57 × 0.6 = 3.762 (truncated/rounded to 3.7 or 3.8, **but not 4**)*

Unit 1: Higher Tier	Mark	Comments
10. (3 +) 12 $\times \frac{9}{12}$ or × 0.75 or equivalent	M1	A table method altering all 3 in the same manner at the same time is M0 M marks may be seen in either order Allow 12 − 3 e.g. Time / To fill / Pumps 9 / 9/12 / 7 or 63 / 9/12 / 1
$\times \frac{7}{5}$ or × 1.4 or equivalent	M1	FT from M0 previously awarded Must be from use of 12 or (12 × 9/12 =) 9 e.g. if this calculation is performed first Time / To fill / Pumps 16.8 / (Full) / 5 or 1.4 / 1/12 / 5
= 15 hours 36 minutes	A2	CAO A1 for any one of the following: • $\frac{63}{5}$ or $12\frac{3}{5}$ or 12.6 (hours) or 12 hours 36 min • $\frac{78}{5}$ or $15\frac{3}{5}$ or 15.6 (hours) • FT from M1M1 for their time + 3 hours correct to the nearest minute provided of equivalent difficulty
10. Alternative method 1 (using pump-hours): *Sight of 7 × 12 AND 7 × 3*	*B1*	
(3 +) $\frac{7 \times 12 - 7 \times 3}{5}$	*M1*	
= 15 hours 36 minutes	*A2*	*CAO* *A1 for any one of the following:* • *$\frac{63}{5}$ or $12\frac{3}{5}$ or 12.6 (hours)* • *$\frac{78}{5}$ or $15\frac{3}{5}$ or 15.6 (hours)* • *FT from M1 for their time + 3 hours correct to the nearest minute provided of equivalent difficulty*
10. Alternative method 2 (using pump-hours): *Sight of 7 × 12 AND 2 × 3*	*B1*	
$\frac{7 \times 12 - 2 \times 3}{5}$	*M1*	
= 15 hours 36 minutes	*A2*	*CAO* *A1 for any one of the following:* • *$\frac{78}{5}$ or $15\frac{3}{5}$ or 15.6 (hours)* • *FT from M1 for their time correct to the nearest minute provided of equivalent difficulty*

		"it can't be negative".
8. $3{\cdot}2 \times 10^4 \div 1000 \div 8 \times 5$ or equivalent	M2	Answer space takes precedence. Operations can be made in any order Award M1 for sight of one of the following • $3{\cdot}2 \times 10^{(1)}$ (km) • $3{\cdot}2 \times 10^4 \div 1000$ or answer of 32 • $3{\cdot}2 \times 10^4 \div 1000 \div 8$ or answer of 4 • $3{\cdot}2 \times 10^4 \div 1000 \times 5$ or answer of 160 • $3{\cdot}2 \times 10^4 \div 8 \times 5$ or answer of 20 000 • $3{\cdot}2 \times 10^4 \div 1{\cdot}6$ or answer of 20 000 • One place value error (e.g. 2×10^x, $3{\cdot}2 \div 1{\cdot}6$).
20 or equivalent	A1	CAO

End of solutions