



GCSE MARKING SCHEME

AUTUMN 2024

**GCSE
MATHEMATICS – NUMERACY
UNIT 2 – FOUNDATION TIER
3310U20-1**

About this marking scheme


The purpose of this marking scheme is to provide teachers, learners, and other interested parties, with an understanding of the assessment criteria used to assess this specific assessment.

This marking scheme reflects the criteria by which this assessment was marked in a live series and was finalised following detailed discussion at an examiners' conference. A team of qualified examiners were trained specifically in the application of this marking scheme. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners. It may not be possible, or appropriate, to capture every variation that a candidate may present in their responses within this marking scheme. However, during the training conference, examiners were guided in using their professional judgement to credit alternative valid responses as instructed by the document, and through reviewing exemplar responses.

Without the benefit of participation in the examiners' conference, teachers, learners and other users, may have different views on certain matters of detail or interpretation. Therefore, it is strongly recommended that this marking scheme is used alongside other guidance, such as published exemplar materials or Guidance for Teaching. This marking scheme is final and will not be changed, unless in the event that a clear error is identified, as it reflects the criteria used to assess candidate responses during the live series.

2(a) $(£)45 + 4 \times (£)28$ $(£)157$	M1 A1	If no marks, award SC1 for a <u>final</u> answer of £140 from $5 \times (£)28$
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<p>2(b)</p> $(521 - 45) \div 28$ $(476 \div 28)$ <p>17 (lessons)</p> <p>(total number of lessons =) 18</p>	<p>M1</p> <p>May be seen in stages Allow M1 for $521 - 45 \div 28$ seen</p> <p>For those candidates who do repeated addition or subtraction, there must be full evidence of the method to award M1 e.g.</p> <ul style="list-style-type: none"> • $521 - 45 = 476$ and adding on at least 10 lots of 28 • $521 - 45$ evaluated incorrectly and adding on at least 10 lots of 28 • Subtracting at least 10 lots of 28 from 476 • Subtracting at least 10 lots of 28 from their $521 - 45$ • $521 - 45 - 28 - 28 \dots\dots\dots$ (using at least 10 lots of 28) • $45 + 28 + 28 \dots\dots$ (using at least 10 lots of 28) <p>A1</p> <p>Unsupported answer of 17 gains M1A1B0</p> <p>B1</p> <p>Must come from supported working ($17 + 1$ shown = 18 gains M1A1B1) FT 'their 17' + 1 provided M1 awarded</p> <p>If M1A0B0 awarded, award SC1 for $45 + (17 \text{ lots of } 28)$ seen i.e. they have shown that there are 18 lessons in total without stating 18. Eg $45 (+) 28 (+) 28 (+) 28 (+) 28 (+) 28 (+) 28 (+) 28 (+) 28 (+) 28 (+) 28 (+) 28 (+) 28 (+) 28 (+) 28 (+) 28 (+) 28 (= 521)$ or equivalent</p> <p>If no marks, award SC2 for</p> <ul style="list-style-type: none"> • an unsupported answer of 18 • an answer of 18 with work that doesn't support an answer of 18 • $521 \div 28 = 18$ (rounding down) <p>If no marks, award SC1 for any one of the following:</p> <ul style="list-style-type: none"> • sight of $521 \div 28$ • answer of 18.6(07...) or 19 provided it comes from $521 \div 28$ <p>An unsupported answer of 19 gains no marks</p>
<p>2(b) Alternative method (using part (a))</p> $(521 - 157) \div 28$	<p>M1</p> <p>Allow M1 for $521 - 157 \div 28$ seen</p> <p>For those candidates who do repeated addition or subtraction, there must be full evidence of the method to award M1 e.g.</p> <ul style="list-style-type: none"> • $521 - 157 = 364$ and adding on at least 6 lots of 28 • $521 - 157$ evaluated incorrectly and adding on at least 6 lots of 28 • Subtracting at least 6 lots of 28 from 364 • Subtracting at least 6 lots of 28 from 'their $521 - 157$' • $521 - 157 - 28 - 28 \dots\dots\dots$ (using at least 6 lots of 28) • $157 + 28 + 28 \dots\dots$ (using at least 6 lots of 28)

13 (lessons) (total number of lessons $13 + 5 = 18$)	A1	Unsupported answer of 13 gets M0A0 unless use of answer in (a) is seen
	B1	FT 'their 13' + 5 provided M1 awarded
2(c) (2 nd option selected) 	B1	
2(d) Reflex angle	B1	
3(a) $79 \div 1.8^2$ 24(.3827...)	M1 A1	Ignore subsequent rounding if 24(.3827....) seen. Accept rounded or truncated answers e.g. 24.3 or 24.4 Do not accept an answer of 25 unless 24(.3827...) seen If correct answer seen with $79 \div 1.8$ award M1A1
3(b) (Time taken =) 3 hours 15 mins or 195 mins (Earliest arrival home is) 6:15 (pm) or 18(:)15	B2 B1	B1 any one of the following: <ul style="list-style-type: none"> clearly calculating $1\frac{1}{2}$ hrs + 15 mins + 20 mins + 25 mins + 45 mins Allow use of 01:30 + 00:15 + 00:20 + 00:25 + 00:45 1 hour 45 mins or 105 mins (1 $\frac{1}{2}$ hours omitted) 3 hours or 180 mins (15 mins omitted) 2 hours 55 mins or 175 mins (20 mins omitted) 2 hours 50 mins or 170 mins (25 mins omitted) 2 hours 30 mins or 150 mins (45 mins omitted) Award B2 B0 for 6:15 am FT 'their 3 hours 15 mins' or 'their 195 mins' provided B1 awarded
<u>3(b) Alternative method – adding times to 3 p.m.</u> (Earliest arrival home is) 6:15 (pm) or 18(:)15	B3	B2 for: <ul style="list-style-type: none"> an answer of 6:15 am an answer that includes correct step-by-step calculations with at most one error or omission. FT from their one error or omission B1 for <ul style="list-style-type: none"> an answer that includes correct step-by-step calculations with at most two errors or omissions. FT from their 2 errors or omissions 3 correctly calculated steps. FT from their 2 errors or omissions
3(c)(i) (size order) 1, 1, 1, 2, 3, 3, 6 (median=) 2	M1 A1	Accept indication of median is 2 e.g. circling of 2 <u>when numbers are in size order.</u> Do not award M1A1 for an unsupported answer of 2. Award SC1 for an unsupported answer of 2.
3(c)(ii) 1	B1	
3(c)(iii) 5	B1	

<p>4(a) $19.4 \times 10.6 - 3.5 \times 6$ $(205.64 - 21)$</p> <p style="text-align: right;">184.64 m² or metres²</p>	<p>M2</p> <p>A1 U1</p>	<p>May be seen in stages Award M1 for either</p> <ul style="list-style-type: none"> • $19.4 \times 10.6 (=205.64)$ • $3.5 \times 6 (=21)$ <p>CAO but allow 184.6 or 185 from correct working This is independent of previous marks</p>
<p>4(b) $19.4 + 10.6 + 19.4 + 10.6$ or equivalent 60 (m)</p> <p>$(19.4 + 10.6 + 19.4 + 10.6) \times (\pounds)2.95$</p> <p>$(\pounds)177$ or 17700(p)</p>	<p>M1 A1</p> <p>M1</p> <p>A1</p>	<p>FT 'their perimeter' provided 'their perimeter' comes from using <u>at least 2</u> of the measurements (e.g. using 19.4 & 19.4 or 19.4 & 10.6 or 10.6 & 10.6)</p> <p>Award A0 if incorrect units used i.e. $\pounds 17700$ or 177p</p> <p>If no marks awarded, award SC1 for any one of the following:</p> <ul style="list-style-type: none"> • answer of $(\pounds)57.23$ from $19.4 \times \pounds 2.95$ • answer of $(\pounds)31.27$ from $10.6 \times \pounds 2.95$.
<p><u>4(b) Alternative method where the perimeter is not found 1st.</u></p> <p>$19.4 \times (\pounds)2.95 + 19.4 \times (\pounds)2.95 + 10.6 \times (\pounds)2.95$ $+ 10.6 \times (\pounds)2.95$ $(57.23 + 57.23 + 31.27 + 31.27)$</p> <p>Or</p> <p>$(19.4 + 19.4 + 10.6 + 10.6) \times (\pounds)2.95$ or equivalent $(\pounds)177$ or 17700(p)</p>	<p>M2</p> <p>A2</p>	<p>Award M1 for</p> <ul style="list-style-type: none"> • $19.4 \times \pounds 2.95 + 10.6 \times \pounds 2.95 (=88.50)$ • $2 \times 19.4 \times \pounds 2.95 + 10.6 \times \pounds 2.95 (=145.73)$ • $19.4 \times \pounds 2.95 + 2 \times 10.6 \times \pounds 2.95 (=119.77)$ • $2 \times 19.4 \times \pounds 2.95 (=114.46)$ • $2 \times 10.6 \times \pounds 2.95 (=62.54)$ <p>Allow $19.4 + 19.4 + 10.6 + 10.6 \times (\pounds)2.95$ for M2</p> <p>CAO Award A1 if incorrect units used i.e. $\pounds 17700$ or 177p</p> <p>If M2 awarded, award A1 for any one of the following: (If answers listed below are seen without a method, award M2A1)</p> <ul style="list-style-type: none"> • $(\pounds)80.67$ (from $19.4 + 19.4 + 10.6 + 10.6 \times (\pounds)2.95$) • $(\pounds)97.83$ (from $10.6 + 10.6 + 19.4 + 19.4 \times (\pounds)2.95$) • $(\pounds)101.34$ (from $2 \times 19.4 + 2 \times 10.6 \times (\pounds)2.95$) • $(\pounds)135.66$ (from $2 \times 10.6 + 2 \times 19.4 \times (\pounds)2.95$) <p>FT from M1 for A1 only for a correct evaluation of their costs</p> <ul style="list-style-type: none"> • $(\pounds)88.5(0)$ • $(\pounds)145.73$ • $(\pounds)119.77$ • $(\pounds)114.46$ • $(\pounds)62.54$ <p>If no marks awarded, award SC1 for any one of the following:</p> <ul style="list-style-type: none"> • answer of $(\pounds)57.23$ from $19.4 \times \pounds 2.95$ • answer of $(\pounds)31.27$ from $10.6 \times \pounds 2.95$.

7(a) 20 (students)	B1	
7(b) 4 (students)	B1	
7(c) 91 (students)	B1	Answer space takes precedence
7(d) 21 (students)	B1	Answer space takes precedence
<p>8(a) (Volume of the small box) $10 \times 10 \times 10$ or (Volume of the large box) $2 \times 10 \times 10 \times 10$</p> <p>(Volume of the small box) $1000 \text{ (cm}^3\text{)}$ or (Volume of the large box) $2000 \text{ (cm}^3\text{)}$</p> <p>Height of large box $\times 12.5 \times 12.5 = 2 \times 1000$ or Height of large box $\times 12.5 \times 12.5 = 2000$</p> <p>(Height of large box $=$) $\frac{2 \times 1000}{12.5 \times 12.5}$ or equivalent</p> <p>$(2000 \div 156.25 =)$ 12.8 (cm)</p>	<p>M1</p> <p>A1</p> <p>m1</p> <p>M1</p> <p>A1</p>	<p>May be implied in further working</p> <p>FT incorrect evaluation of volume Allow for evidence of trial to find the height such that a <u>clear</u> attempt to get an answer of approximately 2000 provided <u>2000 seen</u>, e.g. volume $2000 \text{ (cm}^3\text{)}$ followed by $13 \times 12.5 \times 12.5 = 2031.25$. Not for sight of $12.5 \times 12.5 \times 12.5 (= 1953.125)$</p> <p>FT from previous M1 m0, for omitted 2 or incorrect interpretation of 'twice' provided appropriate rearrangement is in the form $\frac{10 \times 10 \times 10}{12.5 \times 12.5}$ or $\frac{10 \times 10 \times 10}{2 \times 12.5 \times 12.5}$ or equivalent i.e. must include $(10 \times 10 \times 10) \div (12.5 \times 12.5)$ with incorrect interpretation of '2' or omitted '2'</p> <p>CAO Allow final M1 A1 for an embedded correct answer if not contradicted, e.g. $12.5 \times 12.5 \times 12.8 = 2000$</p>
<p>8(b) (Surface area of the box) $6 \times 10 \times 10$ (= 600)</p> <p>(Cost) $6 \times 10 \times 10 \div 240$</p> <p>$(\text{£}) 2.5(0)$</p>	<p>B1</p> <p>M1</p> <p>A1</p>	<p>FT 'their <u>surface area</u>' provided it is a multiple of 100 and $300 \leq$ 'their surface area' ≤ 600, i.e. only FT 300, 400 and 500</p> <p>CAO. Answer space takes precedence</p>

<p>9. (Public transport angle) $150 (^{\circ}) \pm 2^{\circ}$ or $(72\,000 \div 360)$ 200 (people per degree)</p> <p>(Number of people who travel by train) $\frac{4}{5} \times \frac{150}{360} \times 72\,000$ or equivalent (= 24 000)</p> <p>(Number of people who travel by train) 24 000</p>	<p>B1</p> <p>M2</p> <p>A1</p>	<p>Allow seen or implied by all other angles Percentage of $41.66\dots \pm 0.55\dots\%$ implies $150 (^{\circ}) \pm 2^{\circ}$</p> <p>Or alternative full methods For M2 only FT $150 \pm 2^{\circ}$ or $41.66\dots \pm 0.55\dots\%$ If B0 previously awarded FT 'their $72\,000 \div 360$' (number of people per degree)</p> <p>M1 for any one of the following:</p> <ul style="list-style-type: none"> people who travel by public transport $\frac{150}{360} \times 72\,000$ (= 30 000 people) people who travel by bus $\frac{1}{5} \times \frac{150}{360} \times 72\,000$ (= 6 000 people) angle for travel by train $\frac{4}{5} \times 150$ (= 120°) percentage travel by train $\frac{4}{5} \times \frac{41.66\dots}{100}$ (= 33.33... %) <p>Allow M1 for (angle or percentage out of tolerance) for either of the following, or equivalent;</p> <ul style="list-style-type: none"> $\frac{4}{5} \times \frac{\text{'their } 150\text{'}}{360} \times 72\,000$ where $90 < \text{'their } 150\text{' } < 180$ $\frac{4}{5} \times \frac{\text{'their } 41.66\dots\text{'}}{100} \times 72\,000$ where $25 < \text{'their percentage'} < 50$ <p>Depends on M2 or an allowed M1 for full method with the angle or percentage within the increased tolerances Must be correct for 'their 150' or 'their 41.66...%'</p>
<p><i>9. Alternative method</i> (Number of people travel by public transport) $(72\,000 - 72\,000 \div 4 - 72\,000 \div 6 - 72\,000 \div 6 =)$ 30 000</p> <p>(Number of people who travel by train) $\frac{4}{5} \times 30\,000$ 24 000</p>	<p>B2</p> <p>M1</p> <p>A1</p>	<p>B1 for <i>Number of people by:</i> car $72\,000 \div 4$ (= 18 000) AND cycle $72\,000 \div 6$ (= 12 000) AND walk $72\,000 \div 6$ (= 12 000) or equivalent</p> <p>FT 'their $72\,000 - 72\,000 \div 4 - 72\,000 \div 6 - 72\,000 \div 6$'</p>

<p>10. (Area of floor) $\frac{1}{2} \times 4.3 \times 2.7$ $5.8 \text{ (m}^2\text{) or } 5.805 \text{ (m}^2\text{) or } 5.81 \text{ (m}^2\text{)}$</p> <p>(3 tins covers) $3 \times 1.6 \text{ (= 4.8)}$ OR (Number of tins of varnish) $5.805 \div 1.6$ $(= 3.628\dots)$ OR (Area per tin if only 3 tins) $5.805 \div 3 \text{ (= 1.935)}$</p> <p>States or unambiguously implies 'No' AND a suitable correctly evaluated calculation, e.g.</p> <ul style="list-style-type: none"> • $(3 \times 1.6 =) 4.8 \text{ (m}^2\text{)}$ • $(5.805 \div 1.6 =) 3.6(28\dots) \text{ or } 4 \text{ (tins)}$ • $(5.805 \div 3 =) 1.935 \text{ (m}^2\text{)}$ 	<p>M1 A1</p> <p>M1</p> <p>A1</p>	<p>Accept $6 \text{ (m}^2\text{)}$ provided correct working seen</p> <p>Use of information given in the question OR FT 'their derived area of floor', including if not dimensionally correct, e.g. allow FT if 'their derived area' = $2.7 + 4.3 = 7$ or $4.3 \times 2.7 = 11.61$ or $\sqrt{4.3^2 + 2.7^2} = 5.077\dots$ or $\sqrt{4.3^2 + 2.7^2} + 2.7 + 4.3 = 12.077\dots$</p> <p>FT 'their derived area of floor', provided their area calculation involves 4.3×2.7 and is <u>dimensionally correct</u> Ignore additional spurious statements or calculations provided a correct comparison with 'their number of tins' with 3, or 'their area' with $4.8 \text{ (m}^2\text{)}$ is given</p>
<p>11.</p> <p>(Electricity cost is) $654 \times (\text{£})0.30$ $(\text{£})196.2(0) \text{ or } 19620(\text{p})$</p> <p>(Cost of electricity and standing charge is $\text{£}196.20 + 54 =)$ $(\text{£}) 250.2(0)$</p> <p>(Total bill including VAT) $1.05 \times 250.2(0)$ or $250.2(0) + 12.51$</p> <p>$(\text{£})262.71$</p>	<p>M1 A1</p> <p>B1</p> <p>M1</p> <p>A1</p>	<p><u>Incorrect unit of money is penalised -1 once only on the first occurrence, by withholding an A or B mark</u></p> <p>Accept $654 \times 30(\text{p})$ If units are given they must be correct Accept $\text{£}196.20\text{p}$</p> <p>FT provided 654 used in a calculation for 'their cost of electricity' Do not accept if embedded with an incorrect interpretation of the standing charge, e.g. $196.20 + 3 \times 54 = (\text{£})358.20$ is B0</p> <p>If previous M0 A0 B0 for $(654 \times (\text{£})0.30 \times 3 =) \text{£}588.60$ AND $(588.60 + 54 \times 3 = 588.60 + 162 =) \text{£}750.60$, award SC1 for this consistent misunderstanding and then FT</p> <p>FT from 'their derived total of electricity' + 'their standing charge', accept rounding or truncation to a penny Allow M1 A0 for $1.05 \times$ 'their total rounded or truncated to a whole pound'</p> <p>If M0 A0 for inclusive of VAT cost, allow SC1 for an answer of $(\text{£})262.70$, provided not from incorrect working (allow from $250.20 + 12.50$)</p> <p>If final B0 M0 A0, award SC1 for the correct evaluation of $1.05 \times$ 'their derived cost of electricity' having not considered and omitted the standing charge, or previously subtracted the standing charge from 'their cost of electricity'</p>