# Mark Scheme (Results)

# November 2012

GCSE Mathematics Linked Pair Pilot
Application of Mathematics (2AM01)
Higher (Calculator) Paper 1H

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**NOTES ON MARKING PRINCIPLES**

**1**    All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

**2**    Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

**3**    All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

**4**    Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

**5**    Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

**6**    Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
    Comprehension and meaning is clear by using correct notation and labeling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
    Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
    The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

**7**     **With working**

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.

If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.

If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.

If there is no answer on the answer line then check the working for an obvious answer.

Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.

If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

**8**     **Follow through marks**

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.

Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

**9**     **Ignoring subsequent work**

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

**10**     **Probability**

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).

Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.

If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.

If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

**11    Linear equations**
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere).  Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

**12    Parts of questions**
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

**13    Range of answers**
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

| **Guidance on the use of codes within this mark scheme** |
|---|
| M1 – method mark<br>A1 – accuracy mark<br>B1 – Working mark<br>C1 – communication mark<br>QWC – quality of written communication<br>oe – or equivalent<br>cao – correct answer only<br>ft – follow through<br>sc – special case<br>dep – dependent (on a previous mark or conclusion)<br>indep – independent<br>isw – ignore subsequent working |

| Question | | Working | Answer | Mark | Notes |
|---|---|---|---|---|---|
| 1 | (a) | 375 × 9.02 | 3382.50 | 2 | M1 for 375 × 9.02<br>A1 for 3382.5(0)<br><br>(SC B1 for answer of 3382 or 3383 if M0 scored) |
| | (b) | 675 ÷ 9.02 = 74.83<br>£75 – 74.83<br><br>**OR**<br>75 × 9.02 = 676.50<br>676.50 – 675 = 1.50<br>1.50 ÷ 9.02 = 0.166… | £0.17 or 17p or 1.50 Kr | 3 | M1 for 675 ÷ 9.02 (= 74.83...)<br>M1(dep) for 75 – '74.83'<br>A1 for £0.17 or 17p<br><br>**OR**<br>M1 for 75 × 9.02 (= 676.5)<br>M1(dep) for '676.5' – 675<br>A1 for 1.5(0) Kr<br><br>**OR**<br>M1 for 75 × 9.02 (= 676.5)<br>M1(dep) for '676.5' – 675 = 1.5 and '1.5' ÷ 9.02<br>A1 for £0.17 or 17p |
| 2 | | Split shape into two rectangles<br>14 × 10 – 5 × 6 or 14 × 5 + 5 × 8<br>Area = 110 m²<br>110 × 4 = 440 minutes<br>440 ÷ 60 = 7 hours 20 minutes<br>07:00 + 30 mins + 7 h 20 min | 14 50 | 6 | M1 for attempt to find area of shape, eg 14 × 10 – 5 × 6 or 14 × 5 + 5 × 8 or 8 × 10 + 6 × 5 or 8 × 10 + 6 × 5 or 110 seen<br>M1 (dep) for '110' × 4  (= 440) or 60 ÷ 4 (=15)<br>M1 for attempt to find number of hours needed, eg '440'÷ 60 oe eg '110'÷ (60 ÷ 4) or 7 × 60 (= 420) or 7 (hrs) seen<br>A1 for  7 (hrs) 20 (mins) or $7\frac{1}{3}$ (hrs) or 7.33 (hrs)<br>M1 for 7 + 30 (mins) + '7 (hrs) 20 (mins)' (condone 7 (hrs) 33 (mins)) may be implied by answer<br>A1 for 14 50 or 2 50pm or eg 'ten to 3pm' |

| Question | | Working | Answer | Mark | Notes |
|---|---|---|---|---|---|
| 3 | | $\frac{1}{2}(x + x + 1.8) \times 1.2 = 4.8$ <br> $2x + 1.8 = 4.8 \div 0.6$ <br> $2x + 1.8 = 8$ <br> $2x = 6.2$ | 3.1 | 5 | M1 for attempt to use trapezium formula, eg $\frac{1}{2} \times (a + b) \times 1.2 = 4.8$ or $\frac{1}{2} \times (a + 1.8) \times 1.2 = 4.8$ may be implied by sight of 8 <br> M1 for correct attempt to remove brackets, eg $(a + b =) 4.8 \div 1.2 \times 2$ or 8 seen <br> M1 for $(a + b =) x + x + 1.8 (= \text{'}8\text{'})$oe <br> M1 for correct attempt to isolate $x$ on one side of equation, eg $x + x = \text{'}8\text{'} - 1.8$ <br> A1 for 3.1 <br><br> **OR** <br> M1 for attempt to use trapezium formula, eg $\frac{1}{2} \times (a + b) \times 1.2 = 4.8$ or $\frac{1}{2} \times (a + 1.8) \times 1.2 = 4.8$ may be implied by sight of 8 <br> M1 for correct attempt to remove brackets, eg $(a + b =) 4.8 \div 1.2 \times 2$ or 8 seen <br> M2 (dep on first M1)for finding $a$ and $b$ such that $a + b = \text{'}8\text{'}$ and $a - b = 1.8$ <br> (M1 for attempt to eliminate $a$ or $b$, eg $2a = \text{'}8\text{'} + 1.8$ oe) <br> A1 for 3.1 <br><br> **OR** <br> M1 for $(a + b =) x + x + 1.8$ oe <br> M1 for $\frac{1}{2}(x + x + 1.8) \times 1.2 = 4.8$ oe <br> M1 for correct attempt to remove brackets, eg $2x + 1.8 = 4.8 \div 0.6$ or $1.2x + 1.08 = 4.8$ condone one arithmetic error <br> M1 for attempt to isolate $x$ on one side of equation, eg $2x = 8 - 1.8$ or $1.2x = 4.8 - 1.08$ <br> A1 for 3.1 <br><br> **OR** <br> M1 for $\frac{1}{2} \times 1.8 \times 1.2 (= 1.08)$ <br> M1 for $1.2 \times x + \text{'}1.08\text{'}$ oe <br> M1 for $1.2 \times x + \text{'}1.08\text{'} = 4.8$ oe <br> M1 for correct attempt to isolate $x$ on one side of equation, eg $2x = 4.8 - \text{'}1.08\text{'}$ <br> A1 for 3.1 |

| Question | | Working | Answer | Mark | Notes |
|---|---|---|---|---|---|
| 4 | (a) | | 35 | 1 | B1 cao |
| | (b)(i) | 30 ÷ 150 | 0.2 | 3 | M1 for right angled triangle drawn or diff $y$ ÷ diff $x$<br>A1 for 0.2 oe, eg $\frac{30}{150}$ |
| | (ii) | | 20p | | B1 for 20p or £0.20 or ft their (b)(i) |
| | (c) | <u>75 units</u><br>Gas&Air = £35<br>Seagas = £35<br>Sandygas = £37.50<br><br><u>100 units</u><br>Gas&Air = £37.50<br>Seagas = £40<br>Sandygas = £50<br><br>**OR**<br><u>Gas&Air</u> (75) = £35<br>(100) = £37.50<br><br><u>Seagas</u> (75) = £35<br>(100) = £40<br><br><u>Sandygas</u> (75) = £37.50<br>(100) = £50 | Gas&Air with comparisons | 4 | M1 for attempt to calculate 75 units and 100 units for at least one company<br>A1 for (Seagas =) 35 and 40 OR (Sandygas =) 37.5(0) and 50 OR (Gas&Air =) 35 and 37.5(0) oe<br>A1 for (Seagas =) 35 and 40 AND (Sandygas =) 37.5(0) and 50 AND (Gas&Air =) 35 and 37.5(0) oe<br>C1 (dep on M1) for Gas&Air or ft their calculations<br><br>**OR**<br>M1 for attempt to calculate 75 units or 100 units for at least two companies<br>A1 for two of (75 units) 35, 35, 37.5(0) or for two of (100 units) 37.5(0), 40, 50<br>A1 for all of (Seagas =) 35 and 40, (Sandygas =) 37.5(0) and 50, (Gas&Air =) 35 and 37.5(0) oe<br>C1 (dep on M1) for Gas&Air or ft their calculations<br><br>**OR**<br>M1 for straight line drawn through (0, 0) or (75, 37.5) or for line with gradient 0.5 OR for straight line drawn through (75, 35) or (100, 37.5) or for line with gradient 0.1<br>A1 for straight line through (75, 37.5) and (100, 50)<br>A1 for straight line through (75, 35) and (100, 37.5)<br>C1 (dep on M1) for Gas&Air or ft 'straight lines' for Sandygas and Gas&Air<br>[NB tolerance ±2mm square] |

| Question | | Working | Answer | Mark | Notes |
|---|---|---|---|---|---|
| 5 | (a) | | = 2*A2 + 2*B2<br>= C2/2 | 4 | B1 for doubling the length and the width either singly or together eg 2*($x + y$) or 2*$x$ and 2*$y$ or 2*(A2+B2) or 2*A2 and 2*B2 or 2*SUM(A2:B2)<br>B1 for adding the lengths either before or after doubling, eg A2+B2<br>B1 for attempt to dividing their spreadsheet formula by 2 or their cell C by 2, eg C2/2<br>B1 (dep on two formulas) for correct spreadsheet formula notation (condone missing =) |
| | (b) | | 8 | 1 | B1 for 8 or ft their formulas |
| 6 | (a) | | (28,25) and (23, 26) plotted | 1 | B1 for both points plotted correctly tolerance ±2mm square |
| | (b) | | Positive | 1 | B1 for positive |
| | (c) | | 28 − 34 | 2 | B2 for 28 – 34<br>(B1 for 26 – 36) |
| *7 | | 8 cans of cola<br>12 burgers<br>10 buns<br>LCM is 120<br>Cola 5 × 2 × £3.95=£39.50<br>Burgers 10 × £4.95 = £49.50<br>Buns 12 × £1.95 = £23.40 | £112.40 | 6 | M1 for attempt to find LCM of 8, 12 and 10, eg by listing multiples or 120 seen<br>M1 for (cola = )120 ÷ 8 (= 15) packs or (burgers = ) 120 ÷ 12 (= 10) packs or (buns =) 120 ÷ 10 (= 12) packs<br>M1 for (packs of cola =)$\frac{2}{3}$ × '15' (= 10)<br>M2 for (total cost =)$\frac{2}{3}$ × '15' × 3.95 + 10 × 4.95 + 12 × 1.95<br>(M1 for total cost for their packs of cola, burgers and buns)<br>C1 (dep on first M1) for £112.4(0) or ft their costs with work for cola, burgers and buns clearly identified |

| Question | | Working | Answer | Mark | Notes |
|---|---|---|---|---|---|
| 8 | (a) | $(79 + 39) \times 1.2$<br>$118 \times 1.2$<br><br>**OR**<br>$79 \times 1.2 + 39 \times 1.2$<br>$94.80 + 46.80$<br><br>**OR**<br>$\dfrac{20}{100} \times (79 + 39) = 23.60$<br>$118 + 23.60$<br><br>**OR**<br>$\dfrac{20}{100} \times 79 = 15.80$<br>$\dfrac{20}{100} \times 39 = 7.80$<br>$15.80 + 7.80 + 118$ | 141.60 | 3 | M1 for $79 \times 1.2$ (= 94.8) or $39 \times 1.2$ (= 46.8) oe<br>M1 for $79 \times 1.2 + 39 \times 1.2$ oe<br>A1 for 141.6(0)<br><br><br>**OR**<br>M1 for $\dfrac{20}{100} \times 79$ (= 15.8) and $\dfrac{20}{100} \times 39$ (= 7.8)<br>M1 for $\dfrac{20}{100} \times 79 + 79 + \dfrac{20}{100} \times 39 + 39$<br>A1 for 141.6(0)<br><br>**OR**<br>M1 for $\dfrac{20}{100} \times (79 + 39)$ (= 23.6) oe<br>M1 for $\dfrac{20}{100} \times (79 + 39) + 79 + 39$ oe<br>A1 for 141.6(0) |
| | (b) | $20\,000 \times 0.8 = 16\,000$<br>$16\,000 \times 0.9 = 14\,400$<br><br>**OR**<br>$\dfrac{20}{100} \times 20\,000 = 4000$<br>$20\,000 - 4000 = 16\,000$<br>$10\% \times 16\,000 = 1600$<br>$16\,000 - 1600$ | 14 400 | 3 | M1 for $20\,000 \times 0.8$ oe or 16 000 seen<br>M1 for '16 000' $\times 0.9$ oe<br>A1 for 14 400<br><br>**OR**<br>M1 for $20000 - 0.2 \times 20000$ oe or 16 000 seen<br>M1 for $'16000' - 0.1 \times '16000'$ oe<br>A1 for 14 400 |

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|---|---|---|---|---|---|
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| *9 | | $x + x + 4 + 3(x + 4) = 51$<br>$2x + 4 + 3x + 12 = 51$<br>$5x + 16 = 51$<br>$5x = 35$<br>$5x = 35 \div 5$ | Ann 7<br>Beth 11<br>Cath 33 | 5 | M1 for $x + 4$ or $3(x + 4)$ oe seen<br>M1 for $x +$ '$x + 4$' + '$3(x + 4)$'<br>M1 $x +$ '$x + 4$' + '$3(x + 4)$' = 51<br>A1 for 7 or 11 or 33<br>C1 for Ann 7, Beth 11, and Cath 33 oe<br><br>**OR**<br>M1 for using a value for $n$, eg $n + 4$ or $4 \times n$<br>M1 for attempting a trial using $n$, $n + 4$ and $3(n + 4)$<br>M1 for at least 2 trials with correct totals for '$n$'<br>A1 for 11 or 33<br>C1 for Ann 7, Beth 11, and Cath 33 oe |
| 10 | | $7200 \div 0.75$<br><br>$75\% = 7200$<br>$1\% = 7200 \div 75 = 96$<br>$100\% = 96 \times 100$ | 9600 | 3 | M2 for $7200 \div (1 - 0.25)$<br>A1 for 9600<br><br>**OR**<br>M1 for $7200 \div 75$ or 96 seen<br>M1 for '96' $\times$ 100<br>A1 for 9600 |
| 11 | (a) | $15 + 24 + 12 + 36 = 87$<br>$87 \div 4$ | 21.75 | 2 | M1 for $(15 + 24 + 12 + 36) \div 4$<br>A1 for 21.75 |
| | (b) | | upward trend in sales | 1 | B1 for upward trend (in sales) oe or more sets are sold over time or number of sets sold going up oe |

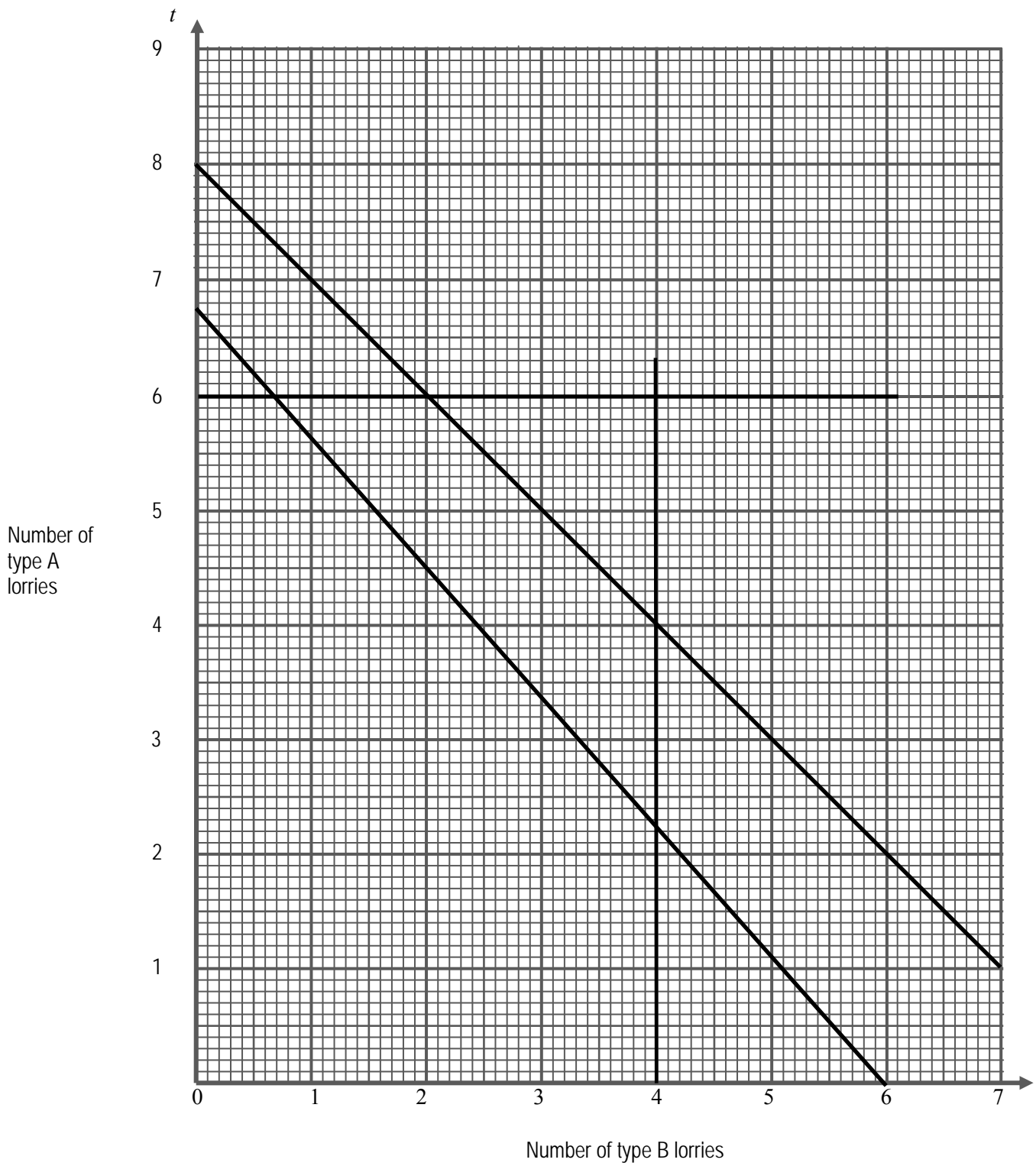| Question | | Working | Answer | Mark | Notes |
|---|---|---|---|---|---|
| 12 | (a) | | graph | 2 | B2 for fully correct cf graph (accept ogive) condone graph starting at (30, 0) <br> [B1 for 4 or 5 points plotted consistently or for cf graph drawn through points other than end points of intervals] |
| | (b)(i) | | 53 – 57 | 3 | B1 for 53 – 57 or ft their cf graph (tolerance ±2mm square) |
| | (ii) | 63 – 43 | 20 | | M1 for 'upper quartile (from cf = 60)' – 'lower quartile (from cf = 20)' (tolerance ±2mm square) <br> A1 for 17 – 23 or ft their cf graph |
| | (c) | 80 – 60 <br><br> **OR** <br><br> $80 - ( 52 + [80 - 52 ] \times \dfrac{3}{10} )$ <br><br> 80 – 60.4 = 19.6 | 19 – 23 | 2 | M1 for 80 – '60 (from $A$ = 63)' for their cf graph (tolerance ±2mm square) or 80 – $(52 + [80 - 52 ] \times \dfrac{3}{10})$ oe <br> A1 for 19 – 23 <br> [SC B1 for 90 – '60 (from $A$ = 63)' (tolerance ±2mm square)] |
| 13 | | eg   $4a + 3b = 250$ <br>      $3a + 4b = 240$ <br><br> (×3)    $12a + 9b$      $= 750$ <br> (×4)    $12a + 16b$      $= 960$ <br><br> Subtract <br> $7b = 210$ so $b = 30$ <br><br> Substitute <br> $4a + 90 = 250$ <br> $4a = 250 - 90 = 160$ <br><br> **OR** <br> Eliminates $b$ first or substitutes back into any equation | (i) 40 <br> (ii) 30 | 5 | B1 for correct equations expressed in terms of two variables (oe) <br> M1 for correct process to eliminate either variable (condone one arithmetic error) <br> A1 for either (£)0.4 or (£)0.3 oe <br> M1 (dep on first M1) for correct substitution of their found variable <br> OR <br> M1 (dep on first M1) for correct process to eliminate the other variable (condone one arithmetic error) <br> A1 cao for both (i) 40 and (ii) 30 <br><br> SC (if M0 scored) <br> B1 for (i) 40 or (ii) 30 |

| Question | | Working | Answer | Mark | Notes |
|---|---|---|---|---|---|
| 14 | (a) | | $9.3 \times 10^7$ | 1 | B1 cao |
| | (b) | | 249 000 | 1 | B1 cao |
| | (c) | | 100 000 000 | 1 | B1 for 100 000 000 or accept $1 \times 10^8$ or $10^8$ or 100 million oe |
| *15 | | | Comparison of data | 3 | C1 for relevant comparison of spread, eg range or IQR<br>C1 for relevant comparison of median (accept average in place of word median)<br>C1 for a different relevant comparison, eg highest values |
| 16 | (a) | Angle $CBH = 180 - 125 = 55º$<br>Angle $CHB = 41º$<br>Angle $BCH = 180 - (55 + 41) = 84º$<br>Angle $RED = 180 - 84$ | 96 | 3 | B1 for ($CBH =$) 55 seen or ($CHB =$) 41<br>M1 for ($BCH =$) 180 – ('55' + 41) (= 84)<br>A1 for 96<br><br>**OR**<br>B1 for ($CHB =$) 41 seen<br>M1 for ($BCH =$) 125 -41 (= 84)<br>A1 for 96 |
| | (b)(i) | $CH = ½ \times 24$ | 12 | 4 | M1 for $½ \times 24$ oe, eg $\frac{10}{20} = \frac{CH}{24}$<br>A1 for 12 |
| | (ii) | $EF = 24 \times 1.5$ | 36 | | M1 for $24 \times 1.5$ oe, eg $\frac{20}{30} = \frac{24}{EF}$ or ft '12' $\times$ 3<br>A1 for 36 |

| 5AM1H_01 | | | | | |
|---|---|---|---|---|---|
| Question | | Working | Answer | Mark | Notes |
| 17 | (a) | | e.g. bars at height 1 cm, 2 cm, 8cm, 6 cm, 6 cm, 1 cm plus frequency density scale | 3 | M1 for frequency/class width or eg 0.02, 0.04, 0.16, 0.12, 0.12, 0.02 (minimum 4 seen)<br>A1 for bars with consistent areas for all frequencies<br>B1 for appropriate frequency density scale or correct key<br>[NB apply same mark-scheme for different frequency density scale] |
| | (b) | $\dfrac{4}{23} \times 100$ | 17.3 – 17.4 | 3 | B1 for (number of fish =) 4<br>M1 for $\dfrac{'4'}{23} \times 100$<br>A1 for 17.3 – 17.4<br><br>**OR**<br>B1 for (area = ) 8<br>M1 for $\dfrac{'8'}{46} \times 100$<br>A1 for 17.3 – 17.4 |

| Question | | Working | Answer | Mark | Notes |
|---|---|---|---|---|---|
| 18 | (a)(i) | | connects lorries and number of drivers | 2 | B1 for connecting lorries and number of drivers , eg there are only 8 drivers |
| | (ii) | | connects total waste with number of trips and lorry capacity | | B1 for connecting total waste with number of trips and lorry capacity, eg 8 trips each with 10 tonnes plus 6 trips each with 15 tonnes must be 'greater than or equal to' how much needs to be moved (540 tonnes) |
| | (b) | | $t \le 6$ $f \le 4$ | 1 | B1 for $t \le 6$ and $f \le 4$  ( accept $y \le 6$ and $x \le 4$ ) |
| | (c) | | plotting graphs | 2 | B2 for identifying the region ft $t \le$ '6' and $f \le$ '4' (B1 for at least 3 correct graphs (ignore shading) ft $t \le$ '6' and $f \le$ '4') |
| | (d) | Profit $= 200t + 150f$ | 6 Type A 2 Type B | 2 | M1 for calculating a profit, eg $200 \times 6 + 150 \times 2$ (= 1500) A1 for 6 Type A and 2 Type B   or   $t = 6$  and  $f = 2$ **OR** M1 for identifying an objective function, eg $200t + 150f = 600$ A1 for 6 Type A and 2 Type B  or  $t = 6$  and  $f = 2$  or  $y = 6$ and $x = 2$ |

Diagram for Q18



Number of type A lorries (vertical axis, labelled $t$, values 1 to 9)

Number of type B lorries (horizontal axis, values 0 to 7)

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| --- | --- | --- | --- | --- | --- |
| Question | | Working | Answer | Mark | Notes |
| 19 | (a) | 512 : 1000 <br> $8^3 : 10^3$ <br> $12 \div 8 \times 10$ <br><br><br><br> OR <br> $\left(\frac{h}{12}\right)^3 = \frac{1000}{512}$ <br> $h^3 = \frac{1000 \times 12^3}{512}$ | 15 | 3 | M1 for $^3\sqrt{512}$ (= 8) and $^3\sqrt{1000}$ (= 10) or 512 : 1000 = $8^3 : 10^3$ oe or (sf =) 0.8 or 1.25 seen <br> M1 (dep) for 12 ÷ '8' × '10' oe or 12 : 15 or 12 × '1.25' or 12 ÷ '0.8' <br> A1 for 15 <br><br> **OR** <br> M1 for $\left(\frac{h}{12}\right)^3 = \frac{1000}{512}$ oe or $^3\sqrt{\frac{1000}{512}}$ or $^3\sqrt{\frac{512}{1000}}$ <br> M1 (dep) for $(h^3 =) \frac{1000 \times 12^3}{512}$ oe (= 3375) <br> A1 for 15 |
| | (b) | 12 : 13.5 = 8 : 9 <br> $8^3 : 9^3 = 512 : 729$ <br><br> OR <br> $\frac{v}{512} = \left(\frac{13.5}{12}\right)^3$ <br> $v = 512 \times \left(\frac{13.5}{12}\right)^3$ | 729 | 3 | M1 for $12^3$ and $13.5^3$ or 12 : 13.5 = 8 : 9 oe <br> M1(dep) for $8^3 : 9^3$ or 512 : 729 <br> A1 for 729 <br><br> **OR** <br> M1 for $\left(\frac{13.5}{12}\right)^3$ or $\left(\frac{12}{13.5}\right)^3$ oe <br> M1 (dep) for $512 \times \left(\frac{13.5}{12}\right)^3$ or $512 \div \left(\frac{12}{13.5}\right)^3$ oe <br> A1 for 729 |

Ofqual

Llywodraeth Cynulliad Cymru
Welsh Assembly Government

*Rewarding Learning*