



OXFORD CAMBRIDGE AND RSA EXAMINATIONS

General Certificate of Secondary Education

MATHEMATICS A

A502/02

Unit B (Higher)

Specimen Mark Scheme

The maximum mark for this paper is **60**.

This document consists of **5** printed pages and **3** blank pages.

| | | | | |
|---|-----|---|------------------------------------|--|
| 1 | | Fully correct line drawn | 3 | M2 for line with gradient 3 M1 for line with intercept -2 |
| 2 | (a) | Fully correct reflection | 2 | M1 for reflection in axes or $x = 2$ |
| | (b) | Fully correct rotation | 2 | M1 for any $\frac{1}{4}$ turn or any rotation with centre (0, 0) |
| | (c) | Fully correct translation | 2 | M1 for any translation 5 left or 2 up |
| | (d) | Fully correct enlargement | 2 | M1 for any enlargement with -ve SF |
| | (e) | A The potato (print) cannot be turned over | 1 1 | |
| 3 | | 143 | 4 | M3 for $720 - (242 + 65 + 90 + 90 + 90)$ M2 for 720 and 577 M1 for 720 or 577 Accept any valid alternative method |
| 4 | * | Fully correct pollen count v humidity scatter graph drawn. Carmela is incorrect as pollen count only affected by humidity. Comments may include pollen count v temperature = no correlation, pollen count v humidity = negative correlation. Correct and clear language throughout. Attempt at pollen count v humidity scatter graph. Considers both graphs and offers a comment on whether Carmela is correct. Comments will be in form of sentences or bullet points. Attempt at temperature v humidity scatter graph or inappropriate types of diagram drawn and a comment made. Little structure or poor spelling, punctuation or grammar. No relevant comment or graph drawn | 5-6 3-4 1-2 0 | For lower mark – there might be a slight slip in the plotting of the graph e.g. one point plotted incorrectly or minor errors in spelling, punctuation or grammar. For lower mark – incomplete graph e.g. missing labels, 2 or 3 points incorrectly plotted or errors in their conclusion(s) or completely accurate graph but with no comments or a few errors in spelling, punctuation or grammar. For lower mark – graph not drawn but comment made with poor spelling, punctuation and grammar. |

| | | | | |
|----|-----|--|--|---|
| 5 | | Any estimation of load/weight using given numbers All four correct* *Correct means either sensible approx. and correct calculations shown, or one of the following answers for each team: Team 1: 20, 21 Team 2: 22, 24 Team 3: 14, 16 Team 4: 20, 17 Most efficient Team 2 Least efficient Team 3 | M1 A3 A1 | A2 for two or three values correct* or A1 for one value correct* cao |
| 6 | (a) | $x < 5.5$ | 2 | B1 for $4x < 22$ or $x = 5.5$ |
| | (b) | Correct line indicated | 1 | ft <i>their</i> inequality in (a) |
| 7 | | £8.50 loss | 4 | B3 for $25 - 16.50$ or £8.50 M2 for clear method on correct line at <i>their</i> 28 or £16.50 M1 for clear method on correct line at £25 or 28 If M0 then SC2 for £12 gain or SC1 for 37 |
| 8 | | Manipulate equations to get equal coefficients Add or subtract as appropriate Substitute to find other variable $x = 3, y = -4$ | M1 M1 M1 A1 | Rearrange one equation in terms of other variable Substitute into other equation Both If M0 then SC1 for non-algebraic method |
| 9 | (a) | Sum opposite angles $\neq 180^\circ$ | 1 | Allow $129 + 40 \neq 180$ or $56 + 135 \neq 180$ |
| | (b) | 69° Tangents from point to circumference equal 69° Alternate segment | 1 1 1 1 | Allow ADC is an isosceles triangle ft <i>their</i> answer for angle x |
| 10 | | 1:8 or 12% or 13% or 12.5% | 3 | B2 for 1/8 M1 for any vert./horizontal calculation seen |

| | | | | |
|----|-----|---|---|---|
| 11 | (a) | (i) $\frac{3}{4}$ | 3 | M2 for $\frac{1}{4}$ and 3 M1 for $\frac{1}{4}$ or 3 |
| | | (ii) 25 | 1 | |
| | | (iii) 14 | 2 | M1 for $\sqrt{7} \times \sqrt{4} \times \sqrt{7}$ or $\sqrt{7} \times 4 \times 7$ or $\sqrt{196}$ |
| | (b) | 4^{11} or 2^{22} | 1 | |
| | (c) | $\frac{53}{99}$ | 2 | M1 for $100x = 53.53\dots - x = 0.53\dots$ |
| | | | | |
| 12 | (a) | (i) $\mathbf{a} + \mathbf{b}$ oe | 1 | |
| | | (ii) $2\mathbf{b} - \frac{1}{2}\mathbf{a}$ oe | 2 | B1 for vector with either $2\mathbf{b}$ or $\frac{1}{2}\mathbf{a}$ |
| | (b) | R marked at correct point | 1 | |

Assessment Objectives and Functional Elements Grid

GCSE MATHEMATICS A

A502/02: Unit B (Higher)

| Qn | Topic | AO1 | AO2 | AO3 | Functional |
|----|---------------------------|-----|-----|-----|------------|
| 1 | Straight lines | 3 | | | |
| 2 | Transformations | 8 | 2 | | |
| 3 | Angles in polygons | | 4 | | |
| 4 | Scatter graph | | | 6 | 6 |
| 5 | Estimation | | 5 | | 5 |
| 6 | Inequality | 3 | | | |
| 7 | Exchange rate graph | | | 4 | 4 |
| 8 | Simultaneous equations | 4 | | | |
| 9 | Circle theorems | 5 | | | |
| 10 | Road sign gradient | | 3 | | 3 |
| 11 | Indices, surds, recurring | 9 | | | |
| 12 | Vectors | | 4 | | |
| | | | | | |
| | TOTAL | 32 | 18 | 10 | 18 |