

8300

GCSE MATHEMATICS

Foundation tier – Questions by Topic – Mark Scheme

Algebra

Reading and plotting coordinates & Recognising horizontal
and vertical lines (including $y=x$ and $y=-x$)

v1.0

Glossary for Mark Schemes

GCSE examinations are marked in such a way as to award positive achievement wherever possible. Thus, for GCSE Mathematics papers, marks are awarded under various categories.

If a student uses a method which is not explicitly covered by the mark scheme the same principles of marking should be applied. Credit should be given to any valid methods. Examiners should seek advice from their senior examiner if in any doubt

M	Method marks are awarded for a correct method which could lead to a correct answer.
A	Accuracy marks are awarded when following on from a correct method. It is not necessary to always see the method. This can be implied
B	Marks awarded independent of method.
ft	Follow through marks. Marks awarded for correct working following a mistake in an earlier step.
SC	Special case. Marks awarded within the scheme for a common misinterpretation which has some mathematical worth.
M dep	A method mark dependent on a previous method mark being awarded.
B dep	A mark that can only be awarded if a previous independent mark has been awarded.
oe	Or equivalent. Accept answers that are equivalent. e.g. accept 0.5 as well as $\frac{1}{2}$
[a, b]	Accept values between a and b inclusive.
3.14...	Allow answers which begin 3.14 e.g. 3.14, 3.142, 3.1416
Use of brackets	It is not necessary to see the bracketed work to award the marks.

Examiners should consistently apply the following principles

Diagrams

Diagrams that have working on them should be treated like normal responses. If a diagram has been written on but the correct response is within the answer space, the work within the answer space should be marked. Working on diagrams that contradicts work within the answer space is not to be considered as choice but as working, and is not, therefore, penalised.

Responses which appear to come from incorrect methods

Whenever there is doubt as to whether a student has used an incorrect method to obtain an answer, as a general principle, the benefit of doubt must be given to the student. In cases where there is no doubt that the answer has come from incorrect working then the student should be penalised.

Questions which ask students to show working

Instructions on marking will be given but usually marks are not awarded to students who show no working.

Questions which do not ask students to show working

As a general principle, a correct response is awarded full marks.

Misread or miscopy

Students often copy values from a question incorrectly. If the examiner thinks that the student has made a genuine misread, then only the accuracy marks (A or B marks), up to a maximum of 2 marks are penalised. The method marks can still be awarded.

Further work

Once the correct answer has been seen, further working may be ignored unless it goes on to contradict the correct answer.

Choice

When a choice of answers and/or methods is given, mark each attempt. If both methods are valid then M marks can be awarded but any incorrect answer or method would result in marks being lost.

Work not replaced

Erased or crossed out work that is still legible should be marked.

Work replaced

Erased or crossed out work that has been replaced is not awarded marks.

Premature approximation

Rounding off too early can lead to inaccuracy in the final answer. This should be penalised by 1 mark unless instructed otherwise.

Q1.

Plots at least 2 points correctly

M1

Plots 3 correct points and Isosceles

SC1 correct type for their 3 points

A1

[2]

Q2.

This question has been adapted to better suit the style of the current specification

Alternative method 1

Plots $(-1, 2)$ and $(1, 6)$

Mark intention

M1

Fully correct ruled line through the correct points

A1

Draws the line $y = x$

B1

$(-4, -4)$

ft their intersection

B1ft

Additional Guidance

Correct line drawn implies points $(-1, 2)$ and $(1, 6)$ are plotted

M1A1

Alternative method 2

Gradient = $\frac{6-2}{1-(-1)}$ or $\frac{2-6}{-1--1}$ or 2 oe

Implied by the correct equation

M1

$(y =) 2x + 4$

Correct function for their gradient

M1dep

their $2x + 4 = x$

ft their function

M1

$(-4, -4)$

A1

Additional Guidance

$$\frac{6-2}{1-(-1)} = -2$$

M1

$$y = -2x + 4$$

M1

$$-2x + 4 = x$$

M1

$$x = \frac{4}{3}$$

A0

[4]

Q3.

(0, 3), (1, 2), (2, 1) and (3, 0) plotted with no other points plotted on the grid

B1

at least two of (0, 3), (1, 2), (2, 1) and (3, 0) plotted with up to two other points plotted on the grid

or

at least four points plotted that would lie on the line $x + y = 3$ where each x and y are not all integers, with no other points plotted on the grid

or

all four correct coordinates given but not plotted, with no additional coordinates

B2

Additional Guidance

Mark intention

Line joining the four correct points with only the four correct points plotted

B2

Line connecting the four correct points but without points plotted

B1

[2]

Q4.

(-2, -2) and (-2, 4) and (4, 4)

B3 for 2 correct coordinates

or the 3 correct lines drawn

B2 for 1 correct coordinate

or 2 correct lines drawn

B1 for 1 correct line drawn

B4

Additional Guidance

Mark coordinates first

Ignore incorrect lines

[4]

Q5.

P (3, 0) Q (5, 5)

B1 P (3, 0) or Q (5, 5)

or both x-coordinates correct

or both y-coordinates correct

SC1 P (5, 5) Q (3, 0)

B2

Additional Guidance

Accept eg P (3, 0)

Do not accept eg P (3x, 0y)

[2]

Q6.

- (a) $(4, 3)$ accept $\begin{matrix} x & y \\ (4, & 3) \end{matrix}$

B1

Additional Guidance

Mark the answer line. If this is blank, the answer may be seen on the diagram but must be the coordinates for P

Do not allow x and y within the coordinates eg $(4x, 3y)$

B0

- (b) $(x, -3)$ where $x \neq 4$
accept eg $\begin{matrix} x & y \\ (5, & -3) \end{matrix}$

B1

Additional Guidance

Do not allow x and y within the coordinates eg $(5x, -3y)$

B0

[2]

Q7.

- (a) Right-angled triangle ABC drawn with
A at $(-3, -2)$ and B at $(1, -2)$ and C at $(-3, 4)$ or $(1, 4)$
B2 for
A, B and C correctly plotted with no triangle drawn
or
A and B correctly plotted and a right-angled triangle drawn
with A and B at two of the vertices
or
C plotted on the line $y = 4$ and a right-angled triangle drawn
with C at one of the vertices
or
A and B correctly plotted with C plotted at $(k, 4)$ with $k \neq -3$ or 1
and triangle ABC drawn
B1 for
A and B correctly plotted
or
C plotted on the line $y = 4$
or
a right-angled triangle drawn

B3

Additional Guidance

Condone incorrect or omitted labelling

- (b) **Alternative method 1**
 $\frac{1}{2} \times \text{their base} \times \text{their height}$

M1

12 ft their triangle

A1ft

Alternative method 2

Evidence of counting squares seen

M1

12 ft their triangle

A1ft

[5]