

8300

GCSE MATHEMATICS

Foundation tier – Questions by Topic – Mark Scheme

Statistics

Finding the mode

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.

mode

B1

[1]

Q2.

Mode

B1

[1]

Q3.

(a) 29

B1

Additional Guidance

Accept words

$\frac{4}{50}$

(b)

$\frac{4}{50}$

oe fraction, decimal or percentage

e.g. $\frac{2}{25}$

0.08 8%

B1

Additional Guidance

Ignore attempts to simplify or convert a correct fraction

B1

Ignore probability words unless contradictory, e.g. $\frac{4}{50}$ unlikely

B1

4 out of 50 or 4 in 50 or 4 : 50 is B0

however, condone 4 out of 50 or 4 in 50 with a correct fraction, decimal or percentage (together on answer line)

B1

but do not accept 4 : 50 with a correct fraction, decimal or percentage (together on answer line)

B0

$\frac{4}{50}$

seen, but answer 4

B0

(c) $8 + 10 + 14 + 7$

or $50 - 4 - 7$ or $50 - 11$ or 39

allow one error (but not omission) in the 4 frequencies being added

frequencies may be seen as numerators of fractions (as probabilities) – ignored denominators as long as they are all the same and all probabilities are < 1

in subtraction method, both frequencies must be correct condone 51 for 50 for M1

M1

$\frac{39}{50}$

$\frac{39}{50}$

oe fraction, decimal or percentage

e.g. 0.78 78%

A1

Additional Guidance

Ignore attempts to simplify or convert a correct fraction

M1A1

$$\frac{8}{100} + \frac{10}{100} + \frac{14}{100} + \frac{6.5}{100}$$

(frequencies have one error and no omissions, seen as probabilities, with same denominator)

M1A0

$$1 - \frac{11}{50} \text{ or } 1 - \frac{7}{50} - \frac{4}{50} \text{ is correct for M1 (allow } \frac{50}{50} \text{ in place of 1)}$$

at least M1

also accept the above with any consistent denominator e.g. $\frac{52}{52} - \frac{11}{52}$

M1A0

$\frac{39}{50}$ then 39 as final answer

M1A0

39 out of 50 or 39 in 50 or 39 : 50 is M1A0
however, condone 39 out of 50 or 39 in 50 with a correct fraction, decimal or percentage (together on answer line)

M1A1

but do not accept 39 : 50 with a correct fraction, decimal or percentage (together on answer line)

M1A0

Ignore probability words unless contradictory, e.g. $\frac{39}{50}$ unlikely

M1A0

Numbers may be shown on the diagram but must then be added (or subtracted from 50 as appropriate) to score M1

$\frac{39}{51}$ (or denominator other than 50)

M1A0**[4]****Q4.**

(a) 4

B1(b) $3 + 6 + 6 + 9 + 4$ or 28*at least four correct and intention to add***M1**their $28 \div 4$

oe

M1dep

7

A1**Additional Guidance**

Totals other than 28 must be evidenced for M1 or M2

$3 + 6 + 6 + 9 + 4 = 29$, $29 \div 4$, answer = 7

M1M1A0**[4]**

Q5.

6

B1

[1]

Q6.

1 2 2 2 3

Any order

B1 for two conditions met

eg 1 1 2 2 3

1 1 2 2 2

1 2 2 3 ...

1 2 2 3 4

B2

[2]

Q7.

(a) Pink

B1

(b) Yellow

B1

[2]

Q8.

(a) There are more 14s than others

or

14 is the most common

oe two 14s, one of everything else

B1

(b) 28

B1

(c) At least 5 values correctly rounded to nearest 10

10, 10, 20, 20, 20, 20

M1

20

A1

[4]

Q9.

(a) 4

B1

(b) $2 + 3 + 4 + 4 + 6 + 1 + 1$

Allow one error or omission

M1

21

A1

(c) $7 - 1$ or $1 - 7$

oe

B1

[4]

Q10.

- (a) Tallies correct

B1

Frequencies correct

1, 1, 3, 6, 3, 2

*Correct or ft. Do not award if tallies are 0, 1, 2, 3, 4, 5***B1**

Using tallies, including 5 bar gate and frequencies written

*QWC strand (ii)**Allow at most one error**Do not award if tallies and frequencies are reversed***Q1**

- (b) 3

B1

- (c) Mode is 1 for boys

B1Yes ($3 > 1$)*ft their mode in part (b)***B1ft****[6]****Q11.**

- (a) School

B1**Additional Guidance**

School and 26

B1

26

B0

- (b) 4 in key

B1 $6\frac{1}{2}$ symbols in 'School'*ft their key $\neq 1$* **B1ft** $2\frac{3}{4}$ symbols in 'Guides'*ft their key $\neq 1$* **B1ft**

Additional Guidance

Key: ○ represents 4 friends

Family	○ ○
Netball	○ ○
School	○ ○ ○ ○ ○ ○ 1
Guides	○ ○ 1

B3

Half circle and three-quarter circle can be any orientation

Three-quarter circle must be an attempt at a **single** sector or arc (not a circle cut vertically or drawn smaller) but may be rotated

Mark intention for size and shape of symbols. Must be sectors or arcs

If the key is blank they can score B0B1B1 for 6.5 and 2.75 symbols

Ignore any symbols added to the first two rows

[4]