

8300

GCSE MATHEMATICS

Foundation and Higher tier – Questions by Topic – Mark Scheme

Statistics

Drawing and interpreting tally charts

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.

7 in strawberry frequency column

B1

5 bar gate in tally for MCC

B1

Key = 2 people

B1

5 cones in vanilla and $2\frac{1}{2}$ cones in MCC

correct or ft their key

B1ft

Additional Guidance

Must use the 5 bar gate notation.

Ignore other tallies eg in the row for 30.

Mark intention for the half cone ie if it looks different then give bod since it's a hard symbol to draw.

Don't worry about alignment of symbols in the pictogram.

Allow key to be correctly modified to equivalent key.

[4]

Q2.

(a) No and 23 and 25

or

No and 2 more

B2

B1 23 or 25

No may be implied by wording

Additional Guidance

Check table for working

Ignore incorrect use of inequalities

23 is less than 25 so Shamira's wrong (box not ticked)

B2

(b) Fully correct bar chart:

- Bars or axis labelled with types of vehicle (accept C, B, V, L)
- four bars with equal widths
- equal gaps or no gaps between the bars
- all heights correct for their frequencies

correct or ft their frequencies from (a) but not 0

B2 3 criteria met

B1 2 criteria met

B3ft

Additional Guidance

Mark intention throughout

Condone a different gap between the vertical axis and the first bar, to the other (equal) gaps

Vertical lines can score a maximum of B2

Points can score a maximum of B1

[5]

Q3.

- (a) C&O frequency = 5

B1

Three tally marks in BBQ

B1

- (b) Key 1 circle represents 2 people or

Half circle represents 1 person

One and a half circles represents 3 people

B1

6 circles in Plain

and

2.5 circles in C&O

*B1 6 circles in Plain **or** 2.5 circles in C&O*

ft their fully completed key

Only award B2ft if BBQ row is also correct for their key

B1ft one row matching their key

B2ft

[5]

Q4.

(a)

	✓
	✓

B1

- (b) 101×65 or 6565 or
 64×75 or 4800 or
 25×85 or 2125 or
 10×95 or 950 or 14 440

*Attempt at fx using one correct midpoint
3610 implies M1M0A0*

M1

(their 6565 + their 4800 + their 2125 + their 950) $\div$ 200
Condone missing brackets eg 13494.75 implies M1M1A0

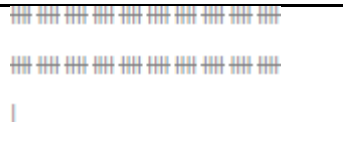
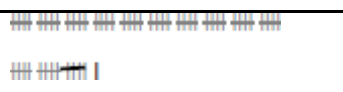
M1dep

72.2

*SC2 77.2 or 67.2
Accept 70 or 72 with fully correct working*

A1

(c)

	101
	66
	29
	14

*B1 all frequencies correct
or
all tallies correct
or
two rows correct*

B2

- (d) frequency polygon and histogram

B1

[7]

Q5.

(iPhone) ||
(Nokia) ||||

SC1 for correct frequencies written in the tally column

B1

(Samsung) |||||

SC1 for 1 correct row

B1

2

SC2 for 2 correct rows

4

ft their tallies

6

B1 ft

[3]

Q6.

(a) Attempt at tally **and** frequency

M1

*At least one row complete and correct
(five bar gate not required)*

Tallies and frequencies correct

All three rows correct (five bar gates not required)

ie. 7, 9, 4

A1

Five bar gate used correctly throughout

Strand (i) – Correct notation

SC1 for correct frequencies (in either column) but no tallies

Q1

(b) their 7 + their 9 + their 4 + 10 (=30)

M1

their 30 ÷ 2 (=15)

M1 dep

6

ft from (a)

Non-integer answers should be rounded or truncated

A1 ft

Alternative method

their 7 + their 9 + their 4 (=20)

M1

their 20 ÷ 2 + 10 ÷ 2 (=15)

M1 dep

6

ft from (a)

Non-integer answers should be rounded or truncated

A1 ft

[6]

Q7.

- (a) $120 - 97$ or $89 - 70 + 31 - 27$
oe or 19 or 4 seen

M1

23

SC1 answer 46

A1

- (b) 15

for Wednesday

B1

24

for Thursday

B1

- (c) $\frac{30}{120}$ seen

oe fraction, decimal, percentage

M1

$\frac{1}{4}$

SC1 $\frac{15}{43}$

SC1 any seen fraction correctly cancelled to simplest form

A1

- (d) $\frac{50}{150}$ or attempts to make a comparison
Seen or implied

M1

$\frac{1}{3}$ or $\left(\frac{1}{4} = \right) \frac{50}{200}$ or both values correct in appropriate comparison
Fraction/decimal/percentage

A1

Their yes with fractions with either same numerator (oe)
or same denominator
or with both values as decimals or both values as percentages
or appropriate diagrams

Strand (iii)

Supporting answers with explanations and evidence

ft their $\frac{1}{4}$ from 3c and their $\frac{1}{3}$

Q1

Alternative method

$\frac{150}{4}$

May be implied by diagram

M1

37.5

A1

Yes ($50 > 37.5$)

Q1

[9]

Q8.

- (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

B1

Yes ($3 > 1$)

ft their mode in part (b)

B1ft

[6]

Q9.

- (a) B = 4 **and** E = 10 **and** C = 

B1 for one or two correct

B2

- (b) $60 \div 4 (= 15)$

oe eg $15 \times 4 (= 60)$ or $\frac{15}{60}$

M1

D

A1

[4]

Q10.

- (a) Correct values and correct use of 5 bar gate

QWC strand (i) correct notation

Q1

Archery 4, Biking 6, Horse riding 2, Karting 3

ft their tallies, or correct.

B1 ft

- (b) Correct number of symbols for all 4 drawn.

Archery 2, Biking 3, Horse riding 1, Karting $1\frac{1}{2}$

B1 for 3 correct.

B2 ft

- (c) Biking

B1

- (d) $\frac{2}{15}$

B1

[6]