

8300

GCSE MATHEMATICS

Foundation tier – Questions by Topic – Mark Scheme

Number

Adding and subtracting decimals

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.

(b) (0).32

B1

(0).02 or (0).12 or (0).22 or (0).42 or -(0).32

B2

[3]

Q2.

0.95

B1

[1]

Q3.

(a) (£) 8.90

strand (i)

Do not accept 8.9 or 890 or 8.90p or 890p

Q1

(b) 64 p or £ 0.64

strand (i) Must have correct units

Do not accept £0.64p or 64 or 0.64p or 0.64

Q1

[2]

Q4.

(3.45 + 2.07 =) 5.52

or (3.45 – 1.3 =) 2.15

or (2.07 – 1.3 =) 0.77

implied by correct answer

B1

4.22

ft their 5.52 – 1.3 correctly evaluated

or their 2.15 + 2.07 correctly evaluated

or their 0.77 + 3.45 correctly evaluated

SC1 6.82 or 0.08

B1ft

Additional Guidance

SC1 arises from correctly adding all three values or from correctly subtracting the final two from the first

[2]

Q5.

- (a) $(16.4 - 3.92 =) 12.48$ or $(16.4 + 7.8 =) 24.2$
or $(7.8 - 3.92 =) 3.88$

B1

20.28 *ft their 12.48 + 7.8*
or their 24.2 - 3.92
or their 3.88 + 16.4
SC1 4.68

B1ft

Additional Guidance

Answer of 20.28

B1B1

4.68 comes from $16.4 - (3.92 + 7.8)$

SC1

- 4.68

SC0

Follow through must have at least 1 decimal place

eg $16.4 - 3.92 = 12$ then $12 + 7.8 = 19.8$

eg $16.4 - 3.92 = 12.58$ then $12.58 + 7.8 = 20.38$

B0B0ft

B0B1ft

[2]

Q6.

- (a) **Alternative method 1**

$3.2 - 1.8$ or 1.4

M1

7

A1

Alternative method 2

$3.2 -$ at least five 0.2s

or $1.8 +$ at least five 0.2s

M1

7

A1

Alternative method 3

$3.2 \div 0.2$ or 16

and $1.8 \div 0.2$ or 9

M1

7

A1

- (b) It will take more days

oe the answer would be higher

eg it will be more than 7

B1

Additional Guidance

Slower/longer than 7 days

B1

Slower/longer alone

B0

[3]

Q7.

- (b) No ticked **and** partial explanation eg
No, one is positive, one negative
No, $33.3 + 0.3$
oe
Implied if Q1 awarded

B1

No ticked **and** full explanation eg
No, it is 33.6
No, $33.3 + - 0.3 = 33$
Strand (iii)
oe

Q1

[2]

Q8.

- (a) 382.4 or 362.42 or 15.82
implied by correct answer of 380.32
384.48 or 344.52 implies B1 (both additions or both subtractions)

B1

380.32

*ft correct evaluation of their $382.4 - 2.08$
or their $362.42 + 17.9$
or their $15.82 + 364.5$*

B1ft

Additional Guidance

Do not apply a misread or allow follow through if this results in a subtraction of either two 2 decimal place values or two 1 decimal place values

[2]

Q9.

20

B1

3.7

ft 23.7 – their 20
SC1 169.6

B1ft

[2]

Q10.

0.7897

B1

[1]

Q11.

- (a) 54.32

B1

[1]

Q12.

Alternative method 1

Orders numbers

7.6 9.6 12.4 12.6 15.4 17.4

Smallest to largest or largest to smallest

M1

7.6 and 17.4

and

9.6 and 15.4

and

12.4 and 12.6

Pairs in any order

A1

Alternative method 2

$(9.6 + 12.6 + 15.4 + 7.6 + 12.4 + 17.4) \div 3$ or 25

or

$(9.6 + 12.6 + 15.4 + 7.6 + 12.4 + 17.4) \div 6$ or 12.5

Implied by one correct pair

M1

7.6 and 17.4

and

9.6 and 15.4

and

12.4 and 12.6

Pairs in any order

A1

[2]

Q13.

- (a) 8.6 and 0.4

*either order***B1**

9(.0)

*ft their two numbers**SC1 answer 9(.0), cards blank***B1ft****Additional Guidance**

Do not allow misreads of the card values in this question

8.6 and 0.27 Answer 8.87

B0B1ft

8.6 and 6.3 Answer 14.9

B0B1ft

0.27 and 6.3 Answer 6.57

B0B1ft

0.27 and 0.4 Answer 0.67

B0B1ft

6.3 and 0.4 Answer 6.7

B0B1ft

8.6 + 0.27 = 8.87 Answer 9

B0B1ft

(ignore rounding if correct decimal seen)

Cards take precedence, but if cards or answer line are blank, mark all other working and award the lowest mark unless their choice is unambiguously identified

- (b) 8.6 and 0.27 in this order only

B1

8.33

*correct or ft their two numbers***B1ft****Additional Guidance**

Do not allow misreads of the cards in this question

Examples of follow through (there are many)

0.27 and 8.6 Answer –8.33

6.3 and 0.4 Answer 5.9

B0B1ft

Cards take precedence, but if cards or answer line are blank, mark all other working and award the lowest mark unless their choice is unambiguously identified

[4]