

8300

GCSE MATHEMATICS

Foundation and Higher tier – Questions by Topic – Mark Scheme

Number

Converting between fractions, decimals and percentages

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.

$$\frac{19}{100}$$

or fraction

B1

Additional Guidance

Ignore attempts to simplify after correct answer seen

[1]

Q2.

0.05

B1

[1]

Q3.

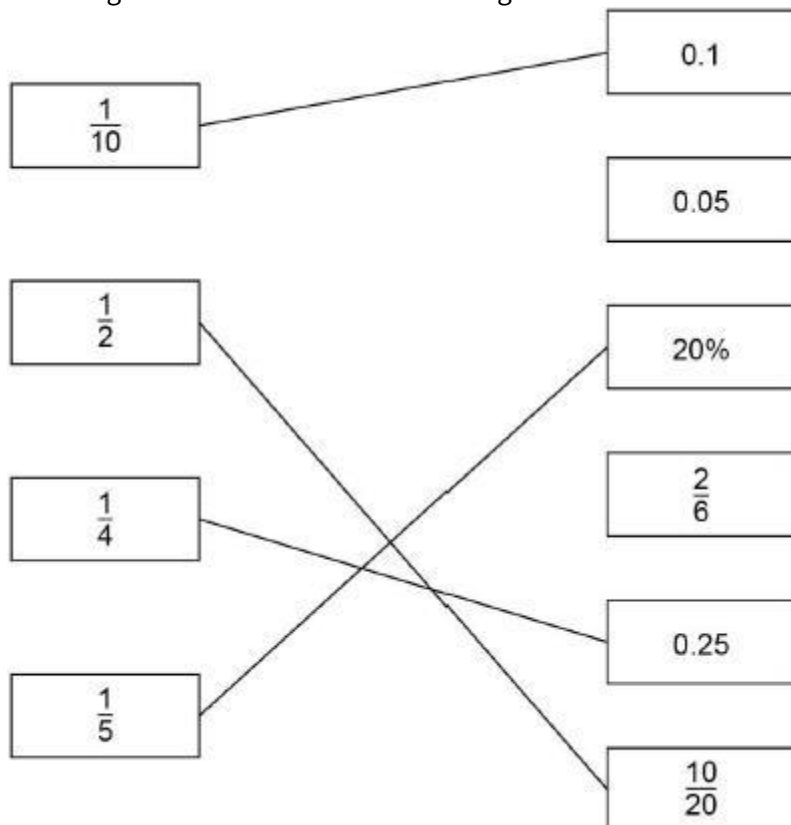
All 3 correct matches

B1 for each correct match

B3

Additional Guidance

Matching to more than one box on the right is choice for that match



B3

[3]

Q4.

Alternative method 1

0.275×3 or 0.825

or

$0.275 \div 10$ or 0.0275

oe

0.0825

M1

A1

Alternative method 2

$0.08\dots$ from division of 33 by 400

or

$0.08\dots$ from division of 3.3 by 40

M1

0.0825

A1

Alternative method 3

$$33 \times \frac{1000}{400}$$

oe

or 33×2.5

or

$33 \div 4$

or

$0.33 \div 4$

or

digits 825

M1

0.0825

A1

[2]

Q5.

Fraction	Percentage
	30%
$\frac{43}{100}$	
	250(%)

B1 for each correct answer

B3

Additional Guidance

Do not accept fractions with non-integer numerator or denominator

eg $\frac{4.3}{10}$

(unless it is an attempt to cancel after correct answer seen)

B0

Ignore attempts to cancel $\frac{43}{100}$

once correct fraction seen

[3]

Q6.

0.6

B1

[1]

Q7.

0.75

B1

[1]

Q8.

top row: (0).5 (0)

B2 two correct

middle row: 75(%)

B1 one correct

bottom row: $\frac{1}{10}$ or $\frac{10}{100}$ oe

B3

[3]

Q9.

(a) Indicates $\frac{4}{10}$

B1

(b) 75

B1

(c) 30

B1

[3]

Q10.

65% 0.76 $\frac{2}{3}$

B2 for 2 correct (and 1 incorrect) or 3 correct and 1 incorrect

B1 for 1 correct (and 1 incorrect) or 2 correct and 2 incorrect

B3

[3]

Q11.

(a) 7.5

Not equivalent to $\frac{3}{4}$
or 0.75 or 75%
oe or other valid reason

B1

(b) $\frac{4}{10}$ and

Not equivalent to $\frac{1}{3}$
oe or other valid reason

B1

(c) $\sqrt{125}$

Not an exact square root
oe or other valid reason

B1

(d) 15

Not a prime number or other valid reason
eg only multiple of 3
or only multiple of 5

B1

[4]

Q12.

33.3%

B1

[1]

Q13.

(a) $\frac{30}{100}$ or $\frac{3}{10}$

oe any equivalent fraction eg $\frac{15}{50}$, $\frac{6}{20}$

B1

Additional Guidance

Accept equivalent fractions such as $\frac{15}{50}$, $\frac{6}{20}$ etc
Do not accept decimal answer such as 0.3, 0.30 etc.

Note: $\frac{1}{3}$ in working with $\frac{3}{10}$ on answer line is B1

(b) 0.8 or 0.80 oe decimal

B1

Additional Guidance

Accept 0.8, 0.80, 0.800, 0.8000 etc

Do not accept fraction answer such as $\frac{80}{100}$, $\frac{8}{10}$ etc.

(c) 0.6 and $\frac{66}{99}$

B1 one correct
or one correct and one incorrect
or two correct and one incorrect
any clear indication

B2

[4]

Q14.

- (a) $\frac{17}{20}$ $\frac{85}{100}$ oe fraction eg $\frac{850}{1000}$
 B1 for their fraction correctly cancelled to simplest form

B2

Additional Guidance

On answer line $\frac{85}{100}$ and $\frac{17}{20}$ (either order) with or without an '='

B2

$$\frac{17}{20} = \frac{4}{5}$$

B1

If you only see $\frac{8.5}{10}$ or $\frac{42.5}{50}$ or $\frac{0.85}{1}$

B0

- (b) 0.625 oe decimal eg 0.6250

B1

Additional Guidance

.625

B1

[3]

Q15.

Alternative method 1

$$\frac{16}{40} \text{ or } \frac{25}{40} \text{ or } \frac{20}{40}$$

M1

Valid comparison

$$\text{eg } \frac{16}{40} \text{ and } \frac{25}{40} \text{ and } \frac{20}{40}$$

$$\text{or } \frac{4}{40} \text{ and } \frac{5}{40}$$

oe

M1

$$\frac{2}{5}$$

Must see working

A1

Alternative method 2

0.4 or 0.625 or 0.5

40(%) or 62.5(%) or 50(%)

M1

0.4 and 0.625 and 0.5

or 0.1 and 0.125

40(%) and 62.5(%) and 50(%)
 or 10(%) and 12.5(%)

M1

$$\frac{2}{5}$$

Must see working

A1

[3]

Q16.

(a) (0).75

B1

90(%)

B1

$\frac{3}{10}$ oe eg $\frac{30}{100}$

B1

(b) 30(%), $\frac{3}{4}$, 0.9 oe

B1

[4]

Q17.

(a) (i) 25(%)

B1

(ii) 0.3(0)

B1

(iii) 0.2(0) $\frac{1}{4}$ 30(%)

Allow answers written as decimals or percentages

B1

(b) (i) 12

B1

(ii) 3

B1

(c) $3 \div 8$ or $(1 \div 8) \times 3$

oe or $\left(\frac{1}{8} =\right) = (0).125$

M1

(0).375

SC1 37.5% or 37.5

100

A1

[7]

Q18.

(a) 60(%)

B1

(b) $\frac{8}{10}$ $\frac{20}{25}$

*B1 for 1 correct answer with at most
1 incorrect answer
or for 2 correct and 1 incorrect*

B2

(c) $70 \div 10 \times 4$ oe

M1

28

SC1 answer of 42 without 28 seen

A1

[5]

Q19.

25 (%)

B1

0.4(0)

B1

$$\frac{9}{10}$$

oe fraction eg, $\frac{90}{100}$

B1

[3]

Q20.

0.215

B1

[1]

Q21.

0.8

B1

[1]

Q22.

1.5

B1

[1]

Q23.

$$\frac{1}{1000}$$

B1

[1]

Q24.

$$\frac{3}{12}$$

B1

[1]

Q25.

$$\frac{3}{25}$$

B1

[1]

Q26.

0.32

B1

[1]

Q27.

$$\frac{27}{100}$$

B1

Additional Guidance

Ignore attempt to simplify after correct answer seen

[1]

Q28.

(a) $5\frac{7}{8}$

B1

Additional Guidance

$5\frac{7}{8}$ in working with 5.875 on answer line

B0

(b) 0.476(...) or 0.477

may be implied

B1

0.48

only ft decimal seen with more than 2dp

B1ft

Additional Guidance

Do not accept answers in standard form

Answer 0.48

B1B1

0.47 with no other decimal seen

B0B0

2.098(...) and 2.10

B0B1ft

[3]

Q29.

$$\frac{3}{20}$$

B1

[1]

Q30.

(a) 75

B1

(b) $\frac{3}{10}$

B1

[2]

Q31.

0.8

B1

[1]

Q32.

0.7

$B1 \frac{7}{10} \text{ or } 0.07$

B2

[2]

Q33.

0.4375

accept .4375

B1

Additional Guidance

7 ÷ 16 with incorrect or no decimal

B0

0.4375 in working with 0.437 or 0.438 or 0.43 or 0.44 or 0.4 on answer line

B0

[1]

Q34.

0.4

oe decimal eg 0.40

B1

Additional Guidance

.4

B1

[1]

Q35.

2.25%

B1

Additional Guidance

2.25

B0

[1]

Q36.

>

B1

=

B1

<

B1

Additional Guidance

Must use the correct symbol, not word equivalents

[3]

Q37.

$\frac{3}{1000}$

B1

[1]

Q38.

$$\frac{37}{8}$$

B1

[1]

Q39.

$$\frac{19}{8}$$

B1

[1]

Q40.

0.56

B1

[1]

Q41.

$$\frac{31}{8}$$

B1

[1]

Q42.

0.875

B1

[1]

Q43.

0.049

B1

[1]

Q44.

$$\frac{15}{8} \text{ or } 1\frac{7}{8}$$

oe fraction eg $\frac{1875}{1000}$

B1

Additional Guidance

Ignore attempts to simplify after correct answer seen

Do not allow fractions with decimal numerators or denominators

eg $\frac{18.75}{10}$

B0

[1]

Q45.

$$\frac{11}{8} \text{ oe fraction eg } \frac{1375}{1000}$$

B1

[1]