

8300

GCSE MATHEMATICS

Foundation tier – Questions by Topic – Mark Scheme

Ratio, proportion and rates of change

Reading, converting and calculating with time

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.

- (a) 3 h 45 min or $9.15 + 3 + 45$
or
 $9.15 + 4 - 15$ or $1.15 \text{ (pm)} - 15$
or
 $9\frac{1}{4} + 3\frac{3}{4}$ or 13(.00 am)
or
1 (o'clock) or 1(.00 am)

M1

oe
condone mixed units

13.00 or 1(.00) pm

A1

Additional Guidance

Condone 13.00 pm

M1A1

$9.15 + 3\frac{3}{4}$ or $12.15 + \frac{3}{4}$ without valid further working

M0A0

- (b) **Alternative method 1 – working in minutes**

$4 \times 60 + 10$ or 250

oe

M1

their 250 – 186

oe their 250 must be > 186

M1

64

SC2 69
SC1 224

A1

Alternative method 2 – working in hours

$186 \div 60$ or 3 h 6 min

oe implied by 3.1 or 1 h 4 min

M1

4 h 10 min – their 3 h 6 min

or 1 h 4 min

oe their 3 h 6 min must be < 4 h 10 min

M1

64

SC2 69
SC1 224

A1

Additional Guidance

SC2 comes from incorrect conversion of 3.1 h to 3 h 1 min

SC1 comes from use of 100 min in an hour

[5]

Q2.

- (a) $145 + 220 (-10)$
 or $365 (-10)$
 or 355
 or $175 + 10$ or 185

M1

- $145 + 220 - 175 (-10)$
 or $365 - 175 (-10)$
 or $365 - 185$
 or $355 - 175$
 or $190 (-10)$

oe

$$175 + x + 10 = 145 + 220 \text{ oe}$$

M1dep

180

*SC1 for 200***A1**

- (b) $130 - 25$ or 105

M1

- $25 \div 50$
 or 0.5 or 30 minutes

oe

M1

- their $105 \div 70$ or 1.5 or
 1 hour 30 minutes or 90 minutes

Dependent on 1st M1 or subtracting 25 from their distance

oe

M1dep

2 hours or 120 minutes

A1

- (c) (The journey will) take longer

oe

B1

More time

B1

(The journey will) be slower

B0**[8]****Q3.**

$$\frac{2}{3} \text{ or } \frac{40}{60} \text{ or } 0.\dot{6}$$

*Allow 0.67 or 0.66 or better***B1**

135

B1**[2]**

Q4.

210

B1

[1]

Q5.

17 (days)

may be implied

B1

their 17×8 or 136

or

their 17×0.08

oe

eg build up – must be fully correct method

repeated addition can imply their number of days

M1

1.36

ft their 17

accept 136p if £ sign deleted

A1ft

Additional Guidance

16 (days) and £1.28

B0M1A1ft

18 (days) and £1.44

B0M1A1ft

Answer only £1.28

B0M0A0

Answer only £1.44

B0M0A0

Beware digits arising from incorrect work

eg $18 \times 0.8 = 14.4(0)$

B0M0A0

Condone £1.36p

B1M1A1

[3]

Q6.

Wednesday and 3(.00) pm

or

Wednesday and 15.00 (h)

B1 Wednesday or 3(.00) pm or 15.00

or 2 days 7 h or 48 + 7 or 24 + 24 + 7

B2

Additional Guidance

Allow 1500 or 15:00 for 15.00

Do not allow 15 or 15(00) pm for 15.00

Allow 3 (o'clock) in the afternoon for 3(.00) pm

Do not allow 03.00 pm for 3(.00) pm

Do not ignore incorrect conversion of time eg 1300 = 3 pm

Mark intention eg W and 3 pm

B2

Wed and 3 am or Wed and 3

B1

55 – 7 = 48

B1

[2]

Q7.

Dan and 20

B1 150 or 2 min 10

$2\frac{10}{60}$ or $2\frac{1}{6}$

or

or 20 in second gap

B2

Additional Guidance

If answer lines blank, up to 2 marks may be awarded from the working lines

Accept twenty for 20

Accept 2:10

Do not accept 130 for Dan

Condone 20 and Dan

B2

Condone incorrect time notation if recovered

eg $2.30 - 2.10 = 20$, answer Dan and 20 s

B2

Samir and 20

B1

Dan alone does not score a mark

eg Dan and 30 on answer line, with 150 in working

B1

eg Dan and 30 on answer line, no working

B0

eg Dan and 2 min 30 s is more

B0

$2:50 - 1:30 = 20$, answer of Dan and 20

B0

$130 = 2.1(0)$

B0

Unless recovered..... $130\text{ s} = 2.10\text{ min}$, answer of Dan and 20

B2

Accept any two conversions that enable comparisons

eg $130 = 60 + 60 + 10$ and $2.5 = 60 + 60 + 30$

B1

2 min 10 with incorrect units

B1

eg 2 h 10 in working, answer Dan and 20 (recovered)

B2

[2]

Q8.

(a) 180 – 125 or 55

M1

125 ÷ 50

or 2.5 or 2h 30 minutes

oe

M1

their 55 ÷ 60 or 11/12 h or 55 min

Dependent on 1st M1 or subtracting 25 from their distance

oe

M1dep

3 hours and 25 minutes

205 mins

A1

(b) (The journey will) take longer

oe

B1

Additional Guidance

More time

B1

(The journey will) be slower

B0

[5]

Q9.

- (a) $88 + 92 (+18)$
or $180 (+18)$
or 198

M1

$$88 + 92 (+18) - 64$$

or $180 - 64 (+18)$
or $198 - 64$

oe
 $64 + x - 18 = 88 + 92$ oe

M1dep

134

SC1 for 98

A1

- (b) $180 - 125$ or 55

M1

$125 \div 50$
or 2.5 or 2 h 30 minutes
oe

M1

their $55 \div 60$ or 11/12 h or 55min

Dependent on 1st M1 or subtracting 125 from their distance
oe

M1dep

3 hours and 25 min
205 mins

A1

- (c) (The journey will) take longer
oe

B1

Additional Guidance

More time

B1

(The journey will) be slower

B0

[8]

Q10.

- (a) $30 \div 40 (\times 60)$ or 45 min or $\frac{3}{4}$
or
 $45 \div 50 (\times 60)$ or 54 min or $\frac{9}{10}$ h
or
 $50 \div 60 (\times 60)$ or 50 min or $\frac{5}{6}$ h
oe

M1

Two of

- $30 \div 40 (\times 60)$ or 45 min or $\frac{3}{4}$ h
and/or
 $45 \div 50 (\times 60)$ or 54 min or $\frac{9}{10}$ h
and/or
 $50 \div 60 (\times 60)$ or 50 min or $\frac{5}{6}$ h
oe

M1

- $30 \div 40 (\times 60)$ or 45 min or $\frac{3}{4}$ h
and
 $45 \div 50 (\times 60)$ or 54 min or $\frac{9}{10}$ h
and
 $50 \div 60 (\times 60)$ or 50 min or $\frac{5}{6}$ h
oe

M1

(Route) 2 with all working correct
oe

A1

Additional Guidance

Condone missing units, but note that 50 is given as both a distance and a speed in the question

- (b) Time = 36 minutes or $\frac{3}{5}$ h
or 18 minutes difference
or scale factor $\frac{5}{3}$
oe

B1

$45 \times \frac{5}{3}$ or $45 \div \frac{3}{5}$
or 75

M1

25 mph faster

A1

Additional Guidance

25 mph with no box ticked

25 mph with slower ticked	B1M1A0	
	B1M1A0	
Q11.		[7]
65 min	B1	
		[1]
Q12.		
(a) 200 ÷ 35		
5 × 35 or 6 × 35 oe		
5.(7...)	M1	
175 or 210		
6	A1	
Strand (i) ft for rounding up		
	Q1 ft	
(b) 200 ÷ 40	M1	
5 and No seen or implied ft their answer from (a) for the conclusion or 1 fewer needed		
	A1 ft	
		[5]

Q13.

Alternative method 1

18 (hours) or 36 (half hours) or 24 (minutes per hour)

Their hours $\times 2 \times 12$ implies 24

B1

18 $\times 2 \times 12$

or 18 $\times 24$

or their hours $\times 2 \times 12$

or their hours $\times 24$

or 36 $\times 12$

or their half hours $\times 12$

oe

M1

432

Ignore fw in an attempt to convert 432 minutes to hours and minutes

A1

Alternative method 2

Build up method using 12 minutes or 24 minutes with at least three additions

M1

36 additions using 12 minutes or 18 additions using 24 minutes

M1dep

432

Ignore fw in an attempt to convert 432 minutes to hours and minutes

A1

Additional Guidance

7 hours 12 minutes with 432 in working

B1M1A1

7.2 hours or 7 hours 20 minutes with 432 in working

B1M1A1

18 hours

18 $\div 2 = 9$ (half hours)

9 $\times 12$

108

B1M1A0

7 hours 12 minutes without 432 in working

B1M1A0

7.2 hours without 432 in working

B1M1A0

Their hours $\times 2 \times 12$ implies 24

eg 2 2 2 2 2 2 (6 hours, 12 half hours))

12 $\times 12$

144

B1M1A0

Condone division of their number of hours by 2 to imply an attempt to calculate their number of half hours

eg 10 hours

10 $\div 2 = 5$ (half hours)

5 $\times 12$

60

B0M1A0

[3]

Q14.

- (a) $315 \div 37.5$ or 8.4
oe

8.40

M1

A1

- (b) No, her yearly pay is more
and $4 \times 12 = 48$
and not 52

oe

B1 for partial working

eg No, her yearly pay is more

and $4 \times 12 = 48$

or 52 weeks = in a year

or More than 4 weeks in a month

B2

[4]

Q15.

315

B1

[1]

Q16.

135

B1

[1]

Q17.

$3\frac{3}{4}$

B1

[1]

Q18.

1 h 45 min

B1

[1]

Q19.

- (a) 5×60 or 300
 or $60 \div 6$ or 10
 $\frac{5}{6}$
 or $\frac{5}{6}$ (hours) or 0.83(3...) (hours)
 $\frac{50}{60}$
 or $\frac{50}{60}$ (hours)
 $\frac{6}{5}$
 or $60 \div \frac{6}{5}$
 oe

M1

50

A1

Additional Guidance

$5 \times 60 \times 6$

M0

(b)

- | | |
|---|---|
| ✓ | It is shorter than the answer to part (a) |
| | It is the same as the answer to part (a) |
| | It is longer than the answer to part (a) |

B1

[3]

Q20.

Alternative method 1

$24 \div 4 \times 3$ or 18

oe

M1

their 18×60 or 1080

oe

1080 implies M2

M1dep

1080 and $\frac{3}{4}$ (of a day)

A1

Alternative method 2

24×60 or 1440

oe

M1

their $1440 \div 4 \times 3$ or 1080

oe

1080 implies M2

M1dep

1080 and $\frac{3}{4}$ (of a day)

A1

Alternative method 3

$24 \div 4 \times 3$ or 18

oe

M1

$1000 \div 60$

or 16(.6...) or 16.7 or 17

may be seen in either order (M marks not dependent)

[16 h 36 m, 16 h 42 m] implies division 16 or 17 may be embedded

M1

16(.6...) or 16.7 or 17 or [16 h 36 m, 16 h 42 m]

and

18 and $\frac{3}{4}$ (of a day)

16 or 17 may be embedded

A1

Alternative method 4

24×60 or 1440

oe

M1

$1000 \div$ their 1440 ($\times 100$)

or $\frac{25}{36}$ or 0.69... or 69(...)%

oe

$\frac{25}{36}$ or 0.69... or 69(...)% implies M2

M1dep

$\frac{25}{36}$ and $\frac{27}{36}$ and $\frac{3}{4}$ (of a day)

or

0.69... and 0.75 and $\frac{3}{4}$ (of a day)

or

69(...)% and 75% and $\frac{3}{4}$ (of a day)

A1

Additional Guidance

Ignore units for the M marks but they must be correct, if given, for the A mark

$\frac{3}{4}$ of 24 is insufficient method unless a correct method or 18 is seen

Once $1000 \div 60$ or 16 or 16.6... or 16.7 or 17 is seen in Alt method 3, ignore any incorrect conversion to hours and minutes. If the student only shows hours and minutes, they must be in the given range.

Do not accept $\frac{3}{4}$ (of a day) in equivalent form e.g. 1080 or 18

A0

[3]

Q21.

Alternative method 1

900 ÷ 600 or 1.5

oe

implied by 4.30 (pm) or 16.30

M1

(8 – 3) – their 1.5

or 5 – their 1.5

or 3.5

oe

M1dep

their 3.5 × 720

oe

M1dep

2520

A1

Alternative method 2

$$900 \div \frac{600}{60}$$

or 900 ÷ 10

or 90

oe

implied by 4.30 (pm) or 16.30

M1

(8 – 3) – (their 90 ÷ 60)

or 5 – (their 90 ÷ 60)

or 3.5

or (8 – 3) × 60 – their 90

or 5 × 60 – their 90 or 210

oe

M1dep

their 3.5 × 720

or

their 210 × 720 ÷ 60

oe

M1dep

2520

A1

Additional Guidance

Condone 3:30 or 3.30 for 3.5(hours)

M1M1

Condone 1:30 or 1.30 for 1.5(hours)

M1

[4]

Q22.

(a) 252 000

B3

60 × 60 × 8 ÷ 4 × 35 oe

B2

60 × 60 × 8 ÷ 4 oe or 7200

or 60 × 60 × 8 × 35 oe or 1 008 000

or 60 × 60 ÷ 4 × 35 oe or 31 500

or 60 × 8 ÷ 4 × 35 oe or 4200

B1

60 × 60 × 8 oe or 28 800

or 60 × 60 ÷ 4 oe or 900

or 60 × 60 × 35 oe or 126 000

or 60 × 8 ÷ 4 oe or 120

or 60 × 8 × 35 oe or 16 800

or 60 ÷ 4 × 35 oe or 525

or 8 ÷ 4 × 35 oe or 70

B4

Additional Guidance

B3, B2 and B1 may be awarded for correct work, with no or incorrect answer, even if this is seen amongst multiple attempts
Condone additional incorrect operations for B3, B2 and B1
eg1 $4 \times 60 \times 60 \times 8 \div 4 \times 35$ ($\times 4$ is an incorrect operation)

B3

eg2 $60 \times 60 \times 8 \div 4 \times 35 = 252\,000$ and $252\,000 \times 4 = 1\,008\,000$

B3

eg3 $60 \times 60 \div 4 = 900$ and $900 \times 480 = 432\,000$ and $432\,000 \times 35$
indicates $60 \times 60 \div 4 \times 35$ ($\times 480$ includes an additional incorrect operation of $\times 60$)

B3

eg4 $35 \times 4 = 140$ and $140 \times 60 \times 8$ indicates $35 \times 60 \times 8$

B1

The operations may be in any order and may be fragmented
eg $8 \div 4 = 2$ and 2×35

B1

An incorrect intermediate answer may be part of a correct set of operations
eg $60 \times 8 = 4800$ and $4800 \div 4 = 1200$ and 1200×35

B2

(b) $32.5 \div 4$

oe

M1

8.125

oe

A1

Additional Guidance

Accept 8.1 or 8.12 or 8.13

M1A1

Accept 8 with M1 seen

M1A1

Ignore truncation or incorrect rounding after correct answer seen

M1A1

[6]

Q23.**(a) Alternative method 1**

$27\,576 \times 24$ or $661\,824$

M1

their $661\,824 \div 42\,600$ or $15.5\dots$

M1

15

A1**Alternative method 2**

$42\,600 \div 27\,576$ or $1.54\dots$

M1

$24 \div$ their $1.54\dots$ or $15.5\dots$

M1

15

A1**Alternative method 3**

$27\,576 \div 42\,600$ or $0.647\dots$

M1

their 0.647×24 or $15.5\dots$

M1

15

A1**(b) Alternative method 1**

$27\,576 \div 60 \div 60$ or 7.66

M1

their 7.66×1000

M1dep

7660

A1**Alternative method 2**

$27\,576 \times 1000$ or $27\,576\,000$

M1

their $27\,576\,000 \div 60 \div 60$

M1dep

7660

A1**Alternative method 3**

$1000 \div (60 \times 60)$ or $0.277\dots$ or 0.28

M1

their $0.277\dots \times 27\,576$

M1dep

7660

A1**[6]**

Q24.

Alternative method 1 Works in min or hrs for 9 episodes and 1 episode

$$9 \times 50 \text{ or } 450$$

or

$$9 \times \frac{50}{60} \text{ or } \frac{450}{60}$$

oe

$$\text{eg } 9 \times \frac{5}{6} \text{ or } \frac{45}{6} \text{ or } \frac{15}{2} \text{ or } 7.5$$

M1

$$60 + 42 \text{ or } 102$$

or

$$\frac{102}{60}$$

oe fraction or 1.7

552 or 9.2 implies M1M1

M1

9 hours 12 minutes

SC2 9 h 32 min or 6 h 32 min

or 9 h 20 min

A1

Alternative method 2 Works in min or hrs for 9 episodes and converts to hrs and min

$$9 \times 50 \text{ or } 450 \text{ or}$$

$$9 \times \frac{50}{60} \text{ or } \frac{450}{60}$$

oe

$$\text{eg } 9 \times \frac{5}{6} \text{ or } \frac{45}{6} \text{ or } \frac{15}{2} \text{ or } 7.5$$

implied by 7 h 30 min

M1

7 h 30 min

ft conversion of their 450 to hours and minutes if their $450 > 60$

$$\begin{array}{r} 450 \\ \text{or their } \frac{450}{60} \text{ to hours and minutes if their} \\ \frac{450}{60} > 1 \end{array}$$

M1

9 hours 12 minutes

SC2 9 h 32 min or 6 h 32 min

or 9 h 20 min

A1

Additional Guidance

$$7 \text{ h } 50 \text{ min} + 1 \text{ h } 42 \text{ min} = 9 \text{ h } 32 \text{ min}$$

SC2

$$4 \text{ h } 50 \text{ min} + 1 \text{ h } 42 \text{ min} = 6 \text{ h } 32 \text{ min}$$

SC2

$$9.2 \text{ h} = 9 \text{ h } 20 \text{ min}$$

SC2

[3]

Q25.

$$\pi \times 30^2 \times 160$$

$$452\,389\dots \text{ or } 144\,000\pi$$
$$[452\,160, 452\,389]$$

M1

$$\text{their } 452\,389 \div 1000$$

$$\text{or their } 452\,389 \div 1000 \div 0.1$$

$$452.3\dots \text{ or } 144\pi$$
$$[452.150, 452.389]$$
$$4523.8\dots$$
$$[4521.6, 4524]$$

M1

$$\text{their } 4523.89 \div 60 (\div 60)$$

$$\text{or } (60 \times 60 =) 3600$$

$$\text{or } 0.1 \times 60 \times 60 \text{ or } 360$$

$$75.398\dots \text{ or } 1.25\dots$$
$$[75.36, 75.4] \text{ or } [1.25, 1.0526]$$

M1dep

$$[75.36, 75.4] \text{ and Yes}$$

or

$$[1.25, 1.0526] \text{ and Yes}$$

or

$$3600 \text{ and } 4523.8\dots \text{ and Yes}$$

or

$$452.3\dots \text{ and } 360 \text{ and Yes}$$

oe

A1

[4]

Q26.

$$20 + 40$$

or

$$60$$

or

$$90$$

or

$$1 \text{ (h)} + 1 \text{ (h)} + 30 \text{ (m)}$$

or

$$150 \text{ or } 2 \text{ (h)} 30 \text{ (m)}$$

M1

$$2\frac{1}{2} \text{ or } 2.5$$

$$\text{oe answer in hours eg two and a half}$$
$$\text{SC1 } 2.3(0)$$

A1

Additional Guidance

Ignore rounding attempt to 2 or 3 after correct answer seen
eg 2.5 in working with answer 2

M1A1

2 h 30 min in working with answer 2

M1A0

$$1.9(0)$$

M0

Q27.

Alternative method 1: works out concrete poured in 30 minutes

$$10.9 \times 30 \times 60 \div 1000 \quad \text{or} \quad 19.6(2)$$

or

$$10.9 \times 30 \times 60 \quad \text{or} \quad 19\,620$$

and

$$20 \times 1000 \quad \text{or} \quad 20\,000$$

oe full method

$$\text{eg } 10.9 \times 1800 \div 1000$$

$$\text{or } 30 \times 654 \div 1000$$

$$\text{or } 19\,620 \div 1000$$

M2 two correct steps

$$\text{eg } 10.9 \times 30 \times 60 \quad \text{or} \quad 19\,620$$

$$\text{or } 10.9 \times 30 \div 1000 \quad \text{or} \quad 0.327$$

$$\text{or } 10.9 \times 60 \div 1000 \quad \text{or} \quad 0.654$$

$$\text{or } 30 \times 60 \div 1000 \quad \text{or} \quad 1.8$$

M1 one correct step

$$\text{eg } 10.9 \times 30 \quad \text{or} \quad 327$$

$$\text{or } 10.9 \times 60 \quad \text{or} \quad 654$$

$$\text{or } 10.9 \div 1000 \quad \text{or} \quad 0.0109$$

$$\text{or } 30 \times 60 \quad \text{or} \quad 1800$$

$$\text{or } 30 \div 1000 \quad \text{or} \quad 0.03$$

$$\text{or } 60 \div 1000 \quad \text{or} \quad 0.06$$

$$\text{or } 20 \times 1000 \quad \text{or} \quad 20\,000$$

M3

$$19.6(2) \quad \text{and} \quad \text{No}$$

or

$$19\,620 \quad \text{and} \quad 20\,000 \quad \text{and} \quad \text{No}$$

*oe eg 19.62 so it isn't***A1****Alternative method 2: works out time for 20 tonnes at given rate**

$$20 \times 1000 \div 10.9 \div 60 \quad \text{or} \quad [30.5, 30.6]$$

or

$$20 \times 1000 \div 10.9 \quad \text{or} \quad [1834, 1835]$$

and

$$30 \times 60 \quad \text{or} \quad 1800$$

oe full method

$$\text{eg } 20\,000 \div 10.9 \div 60$$

$$\text{or } 20 \times [91.7, 91.74312] \div 60$$

$$\text{or } [1834, 1835] \div 60$$

M2 two correct steps

$$\text{eg } 20 \times 1000 \div 10.9 \quad \text{or} \quad [1834, 1835]$$

$$\text{or } 20 \times 1000 \div 60 \quad \text{or} \quad 333.(...)$$

$$\text{or } 20 \div 10.9 \div 60 \quad \text{or} \quad [0.0305, 0.031]$$

$$\text{or } 1000 \div 10.9 \div 60 \quad \text{or} \quad [1.52, 1.53]$$

M1 one correct step

$$\text{eg } 20 \times 1000 \quad \text{or} \quad 20\,000$$

$$\text{or } 20 \div 10.9 \quad \text{or} \quad [1.83, 1.835]$$

$$\text{or } 20 \div 60 \quad \text{or} \quad 0.33(...)$$

$$\text{or } 1000 \div 10.9 \quad \text{or} \quad [91.7, 91.74312]$$

$$\text{or } 1000 \div 60 \quad \text{or} \quad [16.6, 16.7]$$

or 10.9×60 or 654
or 30×60 or 1800

M3

[30.5, 30.6] and No

or

[1834, 1835] and 1800 and No
oe eg 30.6 so it isn't

A1

Additional Guidance

Up to M2 may be awarded for correct work with no answer or incorrect answer, even if this is seen amongst multiple attempts

M3 or M2 will usually be seen in stages

eg Alt 1 $10.9 \times 30 = 327$ $327 \times 60 = 19\,620$ $19\,620 \div 1000$

M3

M2 or M1 may be seen embedded in more than one step (extra steps could be incorrect)

No may be indicated by selecting the box or a statement in the working lines

No cannot be implied only by an inequality

A correct value is sufficient for showing working eg Alt 1 19.62 and No

M3A1

Ignore their units throughout

Other approaches are possible eg works out rate in kg per s for 20 tonnes in 30 minutes and compares to 10.9

[4]

Q28.

1 hour 58 minutes 32 seconds

B1

2 of the 3 values correct

or

correct time not in the form requested

B2

Additional Guidance

1 hour 58 minutes 72 seconds

B1

1 hour 59 minutes 32 seconds

B1

(blank or 0) hour 118 minutes 32 seconds

B1

(blank or 0) hour (blank or 0) minutes 7112 seconds

B1

1 hour 118 minutes 7112 seconds

B0

1 hour 98 minutes 72 seconds

B0

[2]