2021 Assessment resources
GCSE Mathematics

Algebra – Foundation

Answers and commentaries

The question numbers in this resource reflect the question numbers from the original papers and match the question numbers in the corresponding 2021 assessment materials.

Question 5

Please see the mark scheme

Question 7 (a)

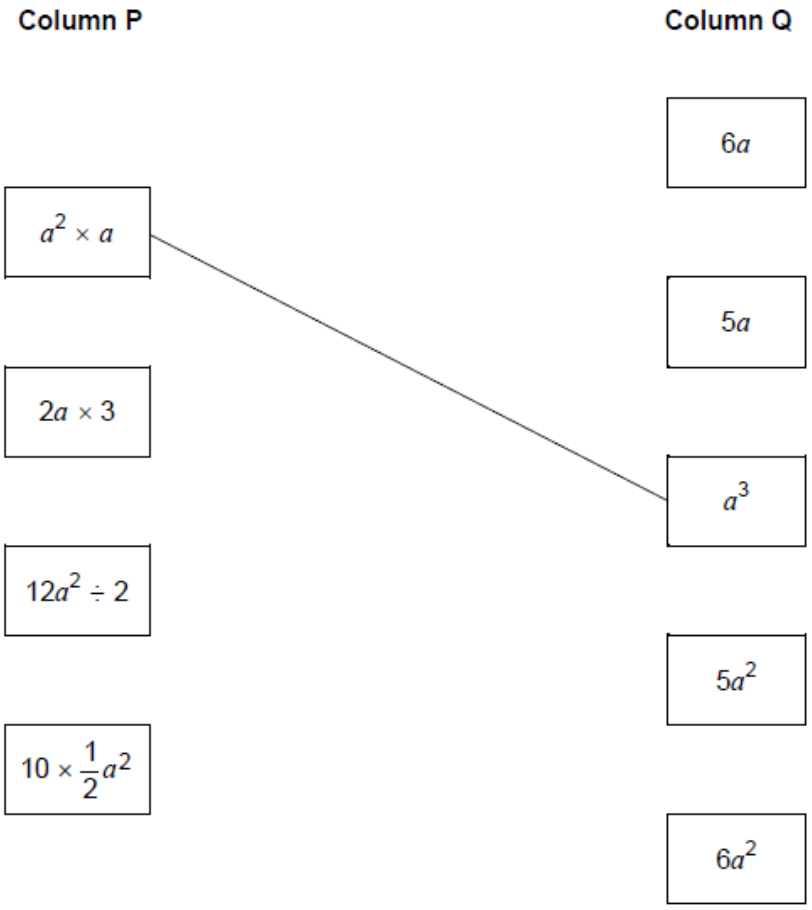
Please see the mark scheme

Question 17

17 Match each expression in Column P with the equivalent expression in Column Q.

One has been done for you.

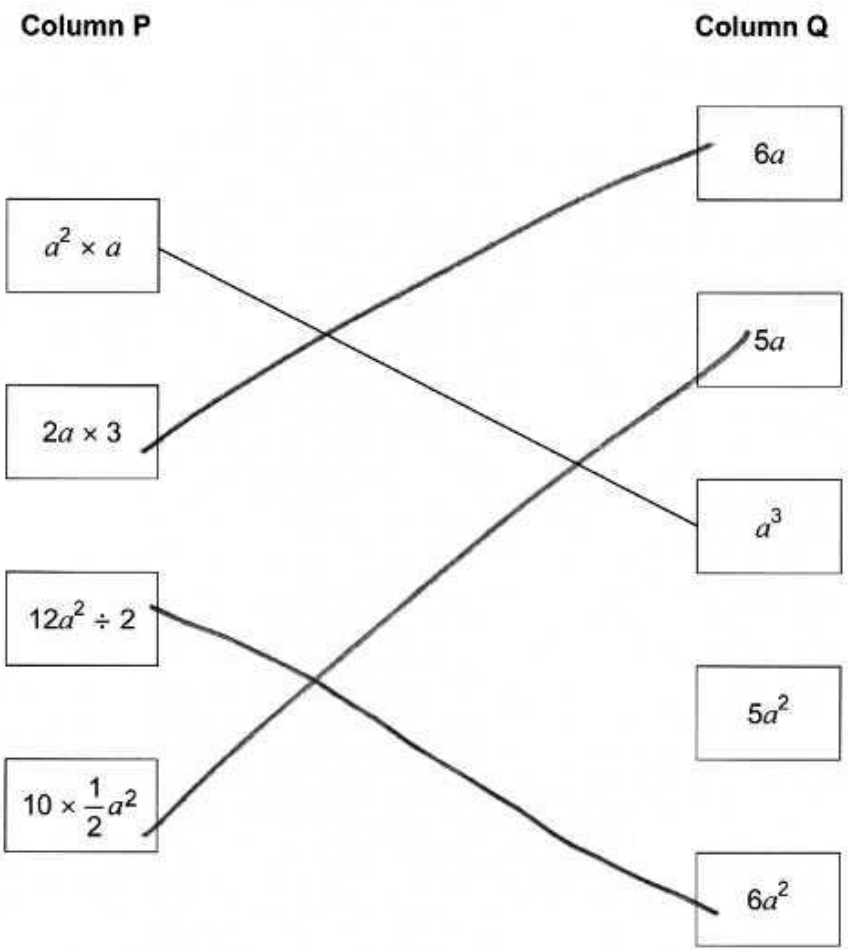
[3 marks]



Student A

17 Match each expression in Column P with the equivalent expression in Column Q.
One has been done for you.

[3 marks]



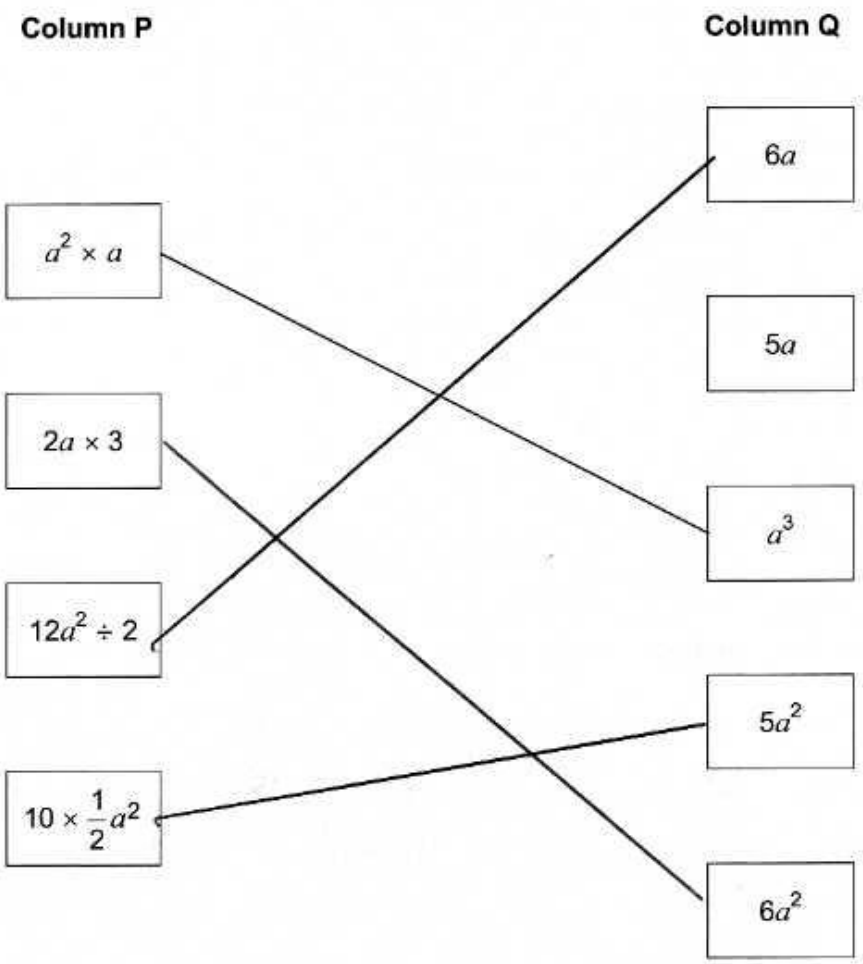
Commentary

The student has matched two of the three expressions correctly.
2 marks

Student B

17 Match each expression in Column P with the equivalent expression in Column Q.
One has been done for you.

[3 marks]



Commentary

The student has matched one of the expressions correctly.
1 mark

Question 7

7 Choose **one** of the following to make a correct statement each time.

[4 marks]

		is less than	is equal to	is greater than
When $a = 3$	$4a$			$a + 7$
When $b = 8$	$2b - 6$			$18 - b$
When $c = 0.5$	$3c$			$c + 1$
When $d = -1$	d			d^2

Student A

7 Choose **one** of the following to make a correct statement each time.

[4 marks]

		~~is less than~~	is equal to	is greater than
When $a = 3$	$4a$	Less than		$a + 7$
When $b = 8$	$2b - 6$	is equal to		$18 - b$
When $c = 0.5$	$3c$	is greater than		$c + 1$
When $d = -1$	d			d^2

Commentary

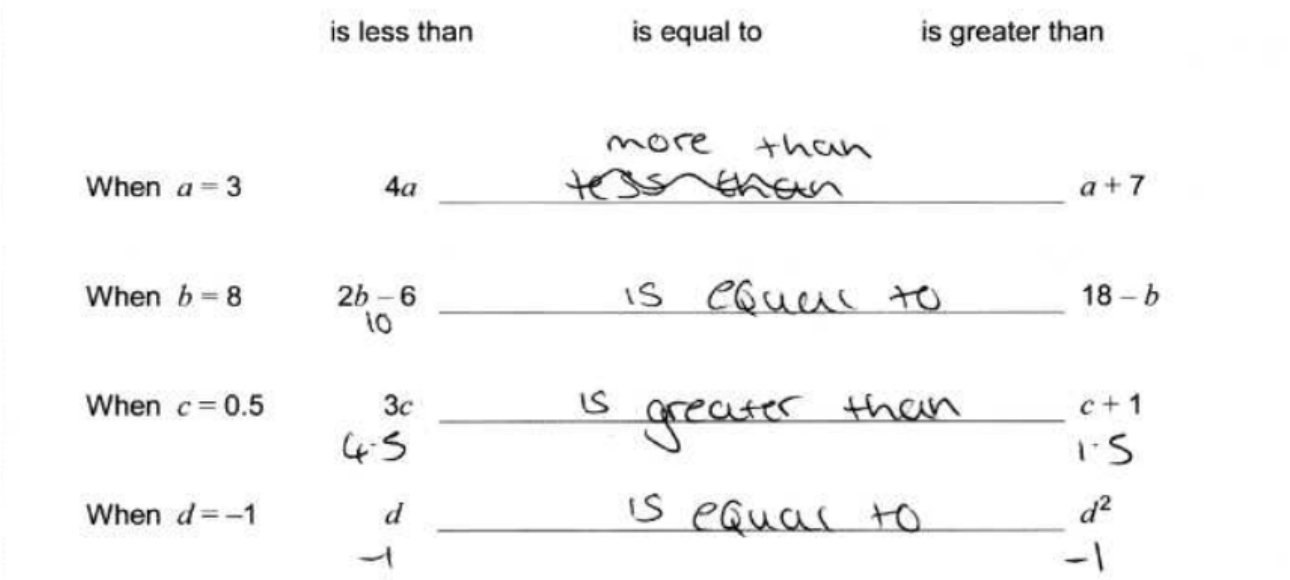
Many students thought that each statement could only be used once. This student has one correct statement.

1 mark

Student B

7 Choose **one** of the following to make a correct statement each time.

[4 marks]



Commentary

Although the student said ‘more than’ rather than ‘is greater than’ their intention is clear. There are two correct statements.

2 marks

Question 5(b)

No examples available

General Commentary

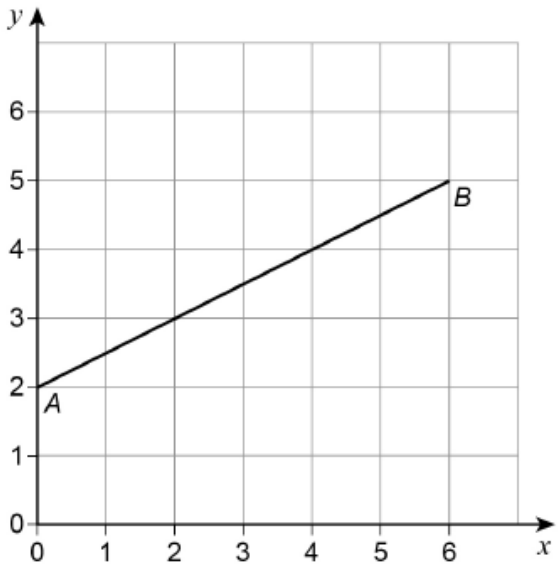
The signs given in brackets in the scheme mean that they do not need to be shown but if they are shown they must be correct. A student that multiplies out the bracket using the grid method may not have the + sign but that is acceptable. There is a lot of follow through available if they expand the brackets incorrectly as long as one term is correct. We do not ignore further attempts to simplify their answer such as collecting terms incorrectly in this type of question.

Question 7 (a)

7 Line *AB* is shown on the grid.

A is the point (0, 2)

B is the point (6, 5)



7 (a) Work out the coordinates of the midpoint of the line *AB*.

[1 mark]

Answer (_____ , _____)

Student A

7 (a) Work out the coordinates of the midpoint of the line *AB*.

[1 mark]

Answer (4 , 4)

Commentary

The student has given the answer to part (b) but there is no credit for this.
0 marks

Question 7 (b)

7 (b) *C* is another point on *AB*.

C is closer to *B* than to *A*.

The coordinates of *C* are whole numbers.

Work out the coordinates of *C*.

[1 mark]

Answer (_____ , _____)

Student A

7 (b) *C* is another point on *AB*.

C is closer to *B* than to *A*.

The coordinates of *C* are whole numbers.

Work out the coordinates of *C*.

[1 mark]

Answer (6 , 6)

Commentary

The student has found a point that is closer to *B* than to *A* but is not on the line *AB*.
0 marks

Question 14

Please see the mark scheme

Question 13 (a)

13 Here is a formula for the amount of water needed to cook rice.

$$w = 1.5r + 0.5$$

w is the number of cups of water needed

r is the number of cups of rice to be cooked

13 (a) How many cups of water are needed to cook 7 cups of rice?

[2 marks]

Answer _____

Student A

13 (a) How many cups of water are needed to cook 7 cups of rice?

[2 marks]

$7 \times 1.5r = 10.5r$ $w = 10.5r + 0.5$ M 0

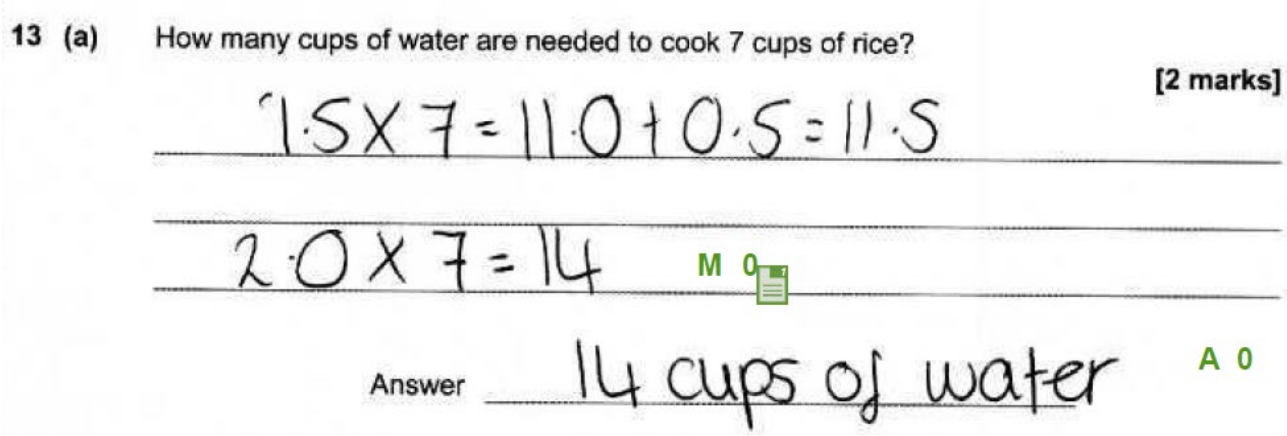
Answer $w = 10.5r + 0.5$ A 0

Commentary

The student still has a variable in the calculation so does not score any marks. If the student had given the answer 11 then we would award 2 marks and allow recovery.

0 marks

Student B

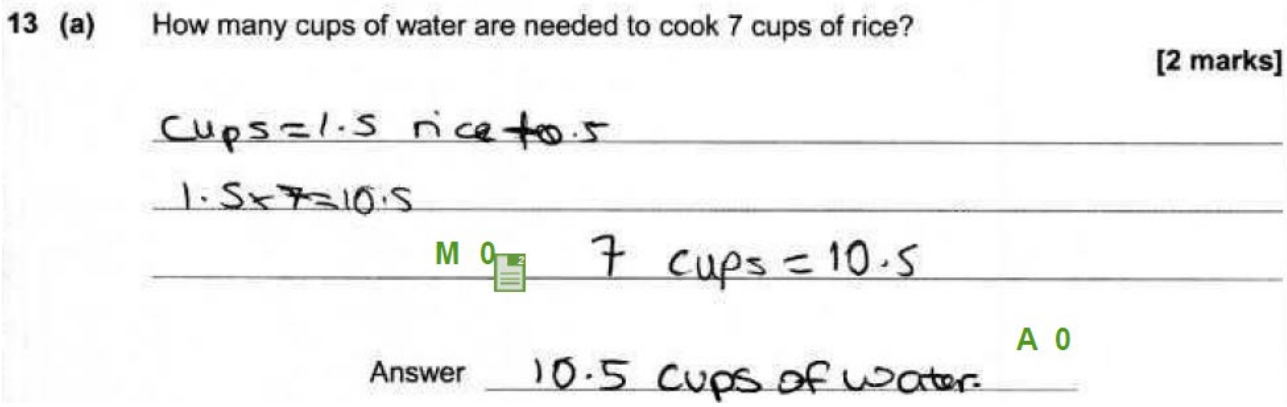


Commentary

The top line of working is the correct method despite the arithmetic error and would have been awarded 1 mark. However, there is a second incorrect method shown and that is the one that leads to the given answer, so we mark that one.

0 marks

Student C



Commentary

Part of the method is shown and is correct but the scheme requires the full method for the first mark, so we also need to see 0.5 added on at the point of substitution.

0 marks

Question 22 (a)

22 Here is a rule for a sequence.

> After the first two terms, each term is half the sum of the previous two terms

22 (a) Here is a sequence that follows this rule.

2 10 6 ....

Show that the 6th term is the first one that is **not** a whole number.

[3 marks]

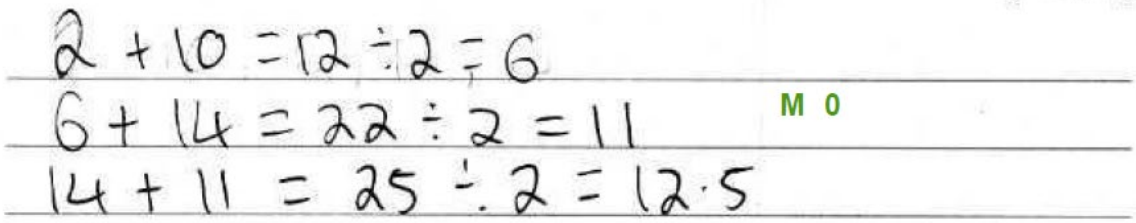
Student A

22 (a) Here is a sequence that follows this rule.

2 10 6 14 11 12·5

Show that the 6th term is the first one that is **not** a whole number.

[3 marks]



M 0

Commentary

The two method marks are independent so the second can be awarded without the first. Here, the method for the 4th term is not shown and the answer is incorrect, so the first mark is not given. However, the method for the 5th term is correct using their 4th term so the student can be awarded the second mark. The final mark needs all three terms correct so cannot be awarded.

1 mark

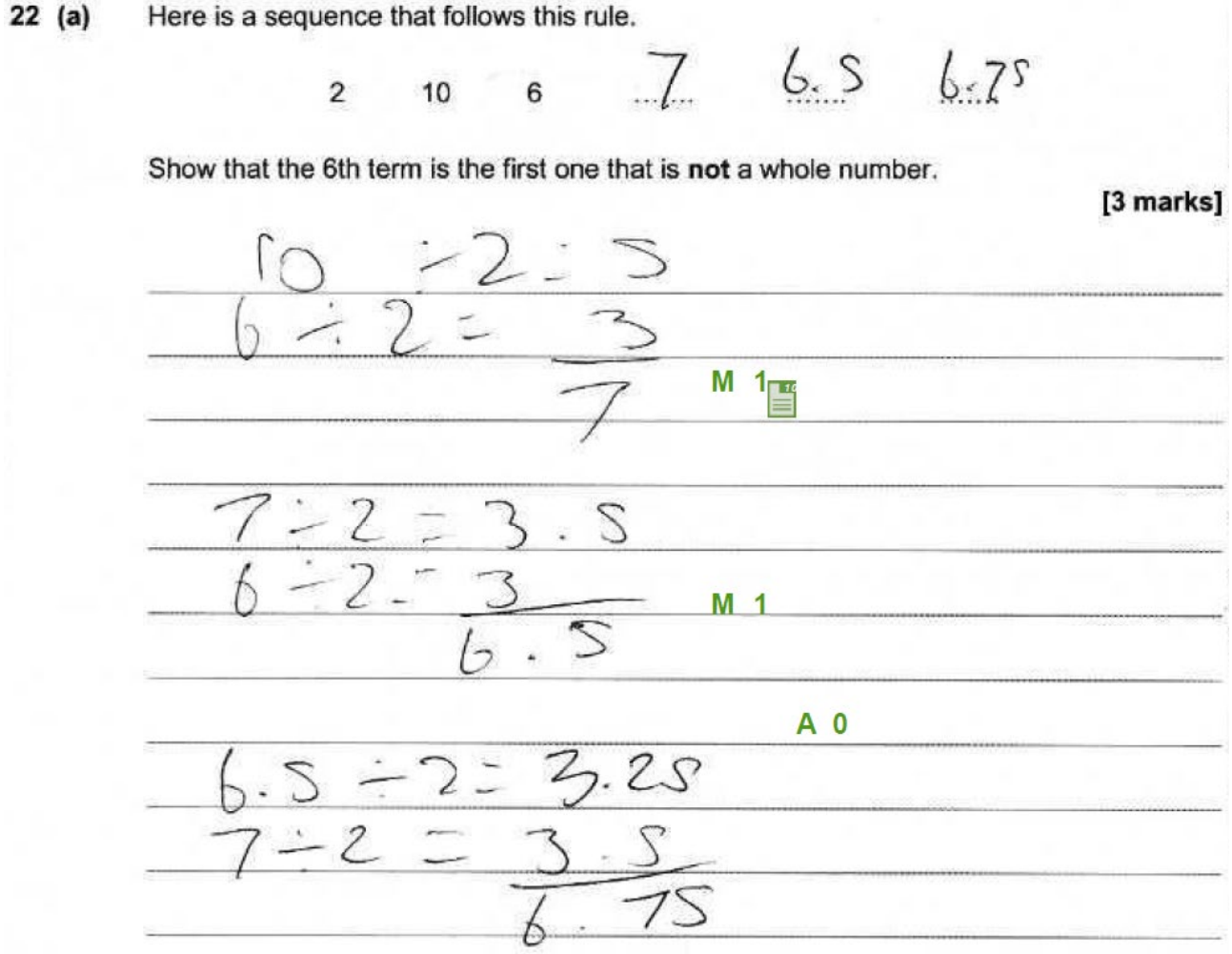
Student B

22 (a) Here is a sequence that follows this rule.

2 10 6 7 6.5 6.75

Show that the 6th term is the first one that is **not** a whole number.

[3 marks]

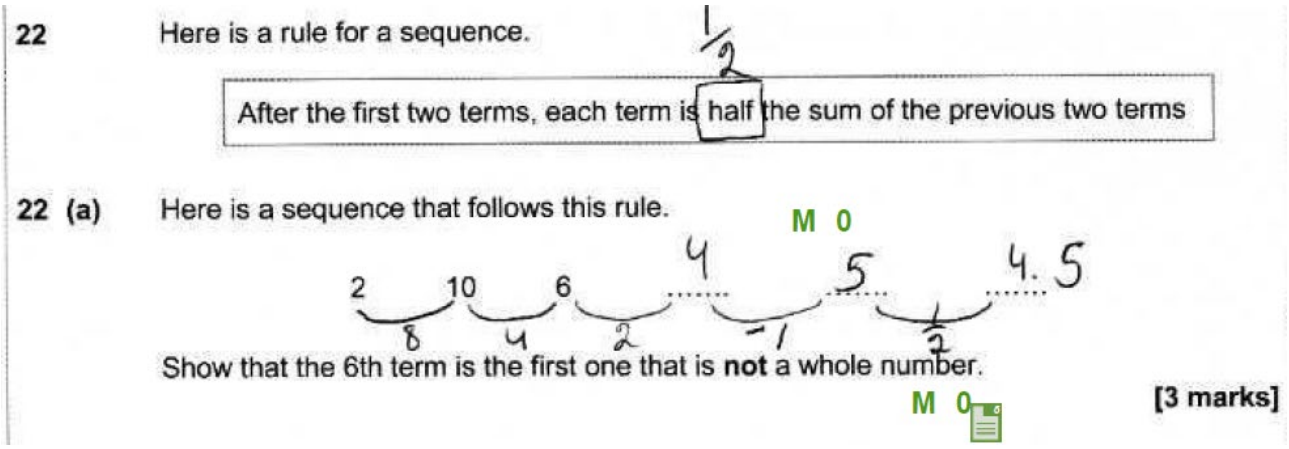


Commentary

The method shown for each term is equivalent to the correct method. In fact, all three terms have the correct method but there is an arithmetic slip in the first addition. Both method marks are awarded but the accuracy mark is lost.

2 marks

Student C



Commentary

The 4th term is incorrect, so the first mark is not awarded. The 5th term comes from an incorrect method that happens to give the correct follow through number. The student has attempted to work out the differences between the terms and then halved them.

0 marks

Question 15 (a)

15 A company uses this formula to work out the cost, £A, of a taxi ride.

$$A = 4 + 1.8m + b$$

£4 is a fixed charge

m is the number of miles travelled

£b is a charge for booking online

15 (a) Clare books a taxi online and travels 8 miles.
She pays £20 altogether.

How much is the charge for booking online?

[3 marks]

Answer £_____

Student A

15 (a) Clare books a taxi online and travels 8 miles.

She pays £20 altogether.

How much is the charge for booking online?

[3 marks]

$1.8 \times 8 = 14.4 + 4 = 18.4$ M 1

£20 − £18.4 = £1.6

Mdep 1

M 2

Answer £ ~~£~~ 1.6 A 0

Commentary

The method is fully correct, but the student gives the answer with incorrect money notation so does not gain the final mark.

2 marks

Student B

15 (a) Clare books a taxi online and travels 8 miles.

She pays £20 altogether.

How much is the charge for booking online?

[3 marks]

$A = 4 + 1.8 \times 8$

$A = 4 + (1.8 \times 8) + 20$ M 1 M 2

$A = 4 + 14.4 + 20$

$A = 38.4$

Mdep 0

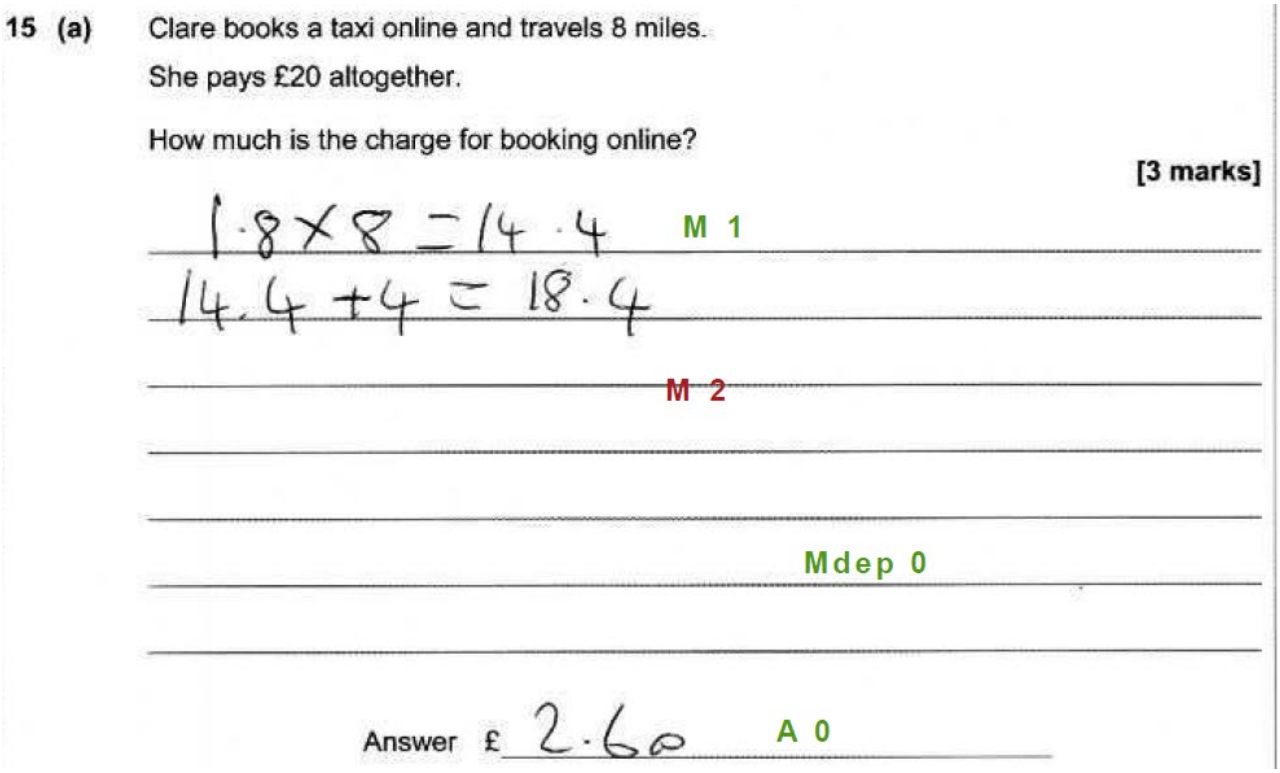
Answer £ 38.4 A 0

Commentary

1.8 × 8 is seen embedded in an incorrect method but the Additional Guidance in the mark scheme says that this can be awarded the first mark.

1 mark

Student C



15 (a) Clare books a taxi online and travels 8 miles.

She pays £20 altogether.

How much is the charge for booking online?

[3 marks]

1·8 × 8 = 14·4 M 1

14·4 + 4 = 18·4

M 2

Mdep 0

Answer £ 2·60 A 0

Commentary

The first mark is gained in the first line of working. The student needs to subtract 18.4 from 20 to gain the second mark but their answer is wrong, so they must show the method to gain the second mark.

1 mark

Question 15 (b)

15 (b) A different company

has a fixed charge of £3

charges £1.90 per mile

has no charge for booking online.

Write a formula for the cost, £C, of a taxi ride with this company.

[1 mark]

Answer _____

Student A

15 (b) A different company

has a fixed charge of £3

charges £1.90 per mile

has no charge for booking online.

Write a formula for the cost, £C, of a taxi ride with this company.

[1 mark]

M 2 B 0

Answer $A = 3 + 1.90 \times mile$

Commentary

The scheme allows 1.90 × mile to mean 1.9m but the question says to use C for the cost and this student has used A.

0 marks

Student B

15 (b) A different company

has a fixed charge of £3

charges £1.90 per mile

has no charge for booking online.

$3 + 1.90 \times 8 =$

$3 + 15.2 = £18.2$

$20 - 18.2 = 1.80$

Write a formula for the cost, £C, of a taxi ride with this company.

[1 mark]

M 2

Answer £~~1 + 80~~ $C = 3 + 19m + b$ B 0

Commentary

This student has added b to the formula, despite the question stating that this is zero, so does not gain the mark.

0 marks

Question 22 (a)

22 Here is a formula.

$$T = n^2 - \frac{12}{n}$$

22 (a) Work out T when $n = 5$

[1 mark]

Answer _____

Student A

22 (a) Work out T when $n = 5$

[1 mark]

$T = 5^2 - \frac{12}{5}$

$T = 5^2 - 2.4 = 22.6$

B 1

Answer $T = 5^2 - \frac{12}{5}$

Commentary

The answer on the answer line is seen as supporting rather than contradicting the correct value of 22.6 in the working lines.

1 mark

Student B

22 (a) Work out T when $n = 5$ **[1 mark]**

$T = \frac{5^2 - 12}{5} = 22.60$

Answer 22.60 B 1

Commentary

Unless a question specifies the number of decimal places, we would always accept equivalent decimals with trailing zeros.

1 mark

Question 28

28 Solve $5(x + 3) < 60$

[2 marks]

Answer _____

Student A

28 Solve $5(x + 3) < 60$

[2 marks]

$5x + 15 < 60$

$-15 \quad -15$

$5x < 45$ M 1

Answer $+ = 9$ A 0

Commentary

The first or third line scores the first mark but the answer does not use the correct inequality.
1 mark

Student B

28 Solve $5(x + 3) < 60$ **[2 marks]**

$5x + 15 = 60$ $x = 9$

-15

$5x = \frac{45}{5} = 9$

Answer $x < 9$. 2

Commentary

The student uses equals throughout but recovers the answer to the correct inequality so is awarded both marks.

2 marks

Student C

28 Solve $5(x + 3) < 60$ **[2 marks]**

$5\overline{)57^{2}0}$ 11·4

$5x + 3 < 60$

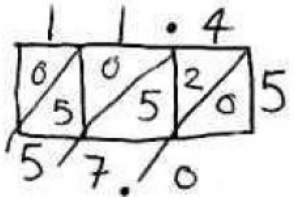
$-3 \quad -3$

$5x = 57$

$x = 11.4$

M 0

Answer $x = 11 \cdot 4$



Commentary

The student makes an error when expanding the brackets so cannot gain any marks.

0 marks

Question 26

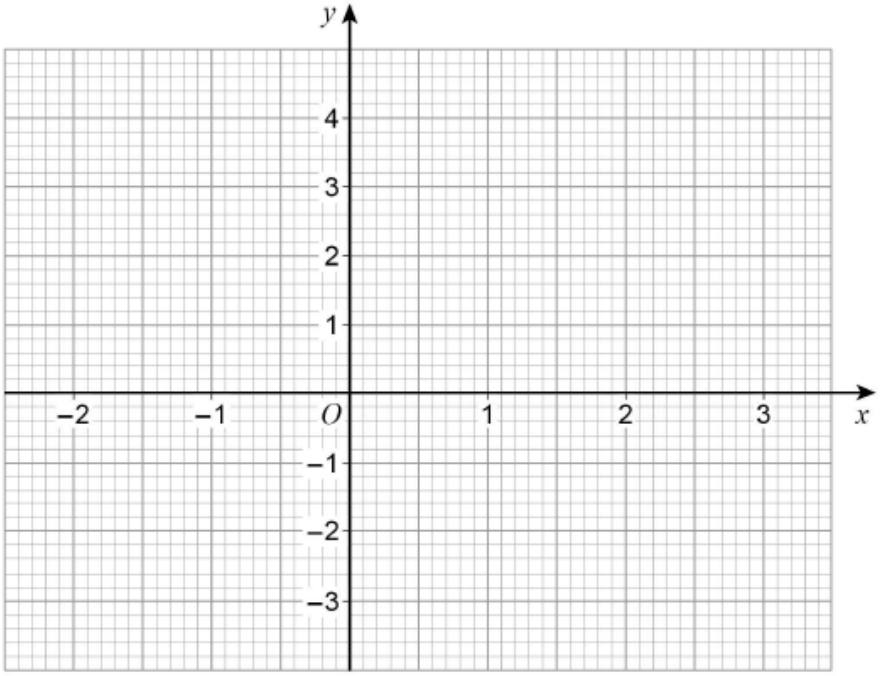
26 (a) Complete the table of values for $y = x^2 - x - 2$

[2 marks]

x	–2	–1	0	1	2	3
y			–2	–2		4

26 (b) Draw the graph of $y = x^2 - x - 2$ for values of x from –2 to 3

[2 marks]



Student A

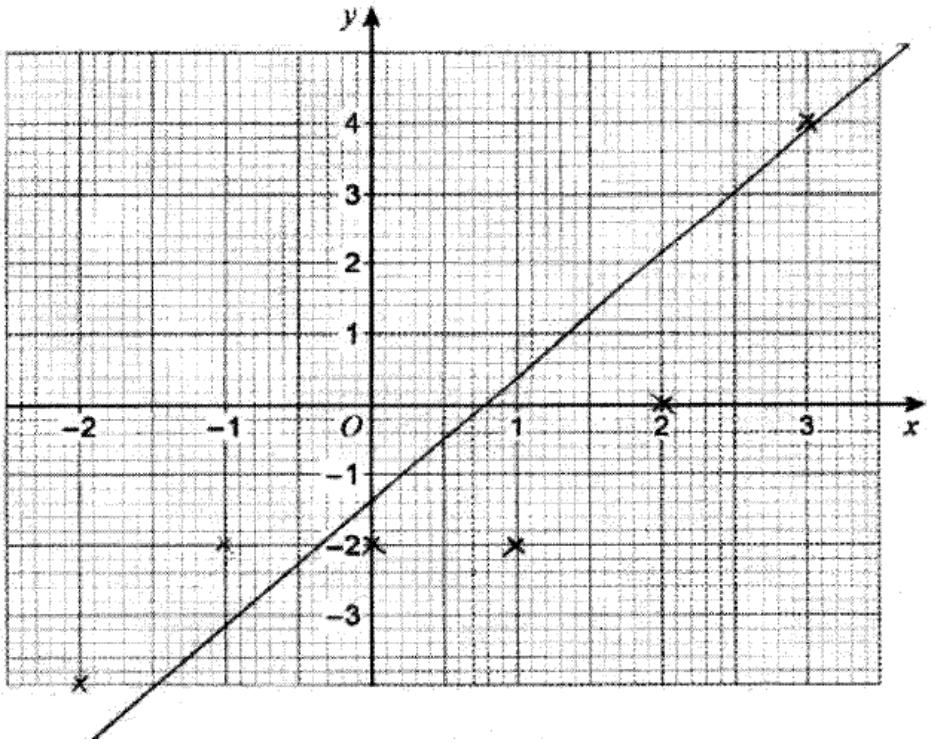
26 (a) Complete the table of values for $y = x^2 - x - 2$

[2 marks]

x	−2	−1	0	1	2	3
y	−4	−2	−2	−2	0	4

26 (b) Draw the graph of $y = x^2 - x - 2$ for values of x from −2 to 3

[2 marks]



Commentary

In part (a) the student scores 1 mark because they have one correct value.
In part (b) they correctly plot all of their points, so they gain the first mark.
1 mark in each part