2021 Assessment resources
GCSE Mathematics

Algebra – Common

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 20

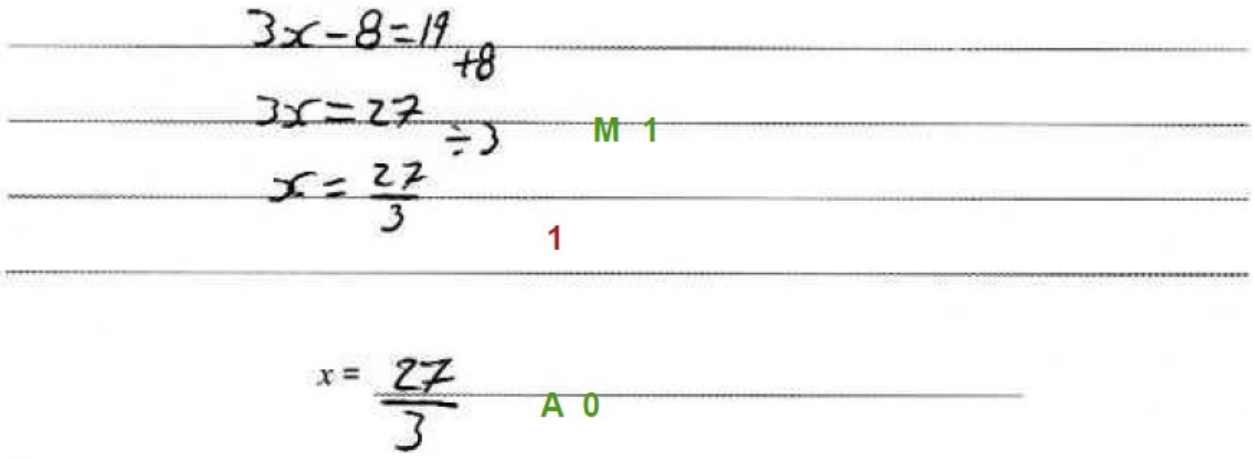
20 Solve $3x - 8 = 19$

[2 marks]

Student A

Solve $3x - 8 = 19$

[2 marks]

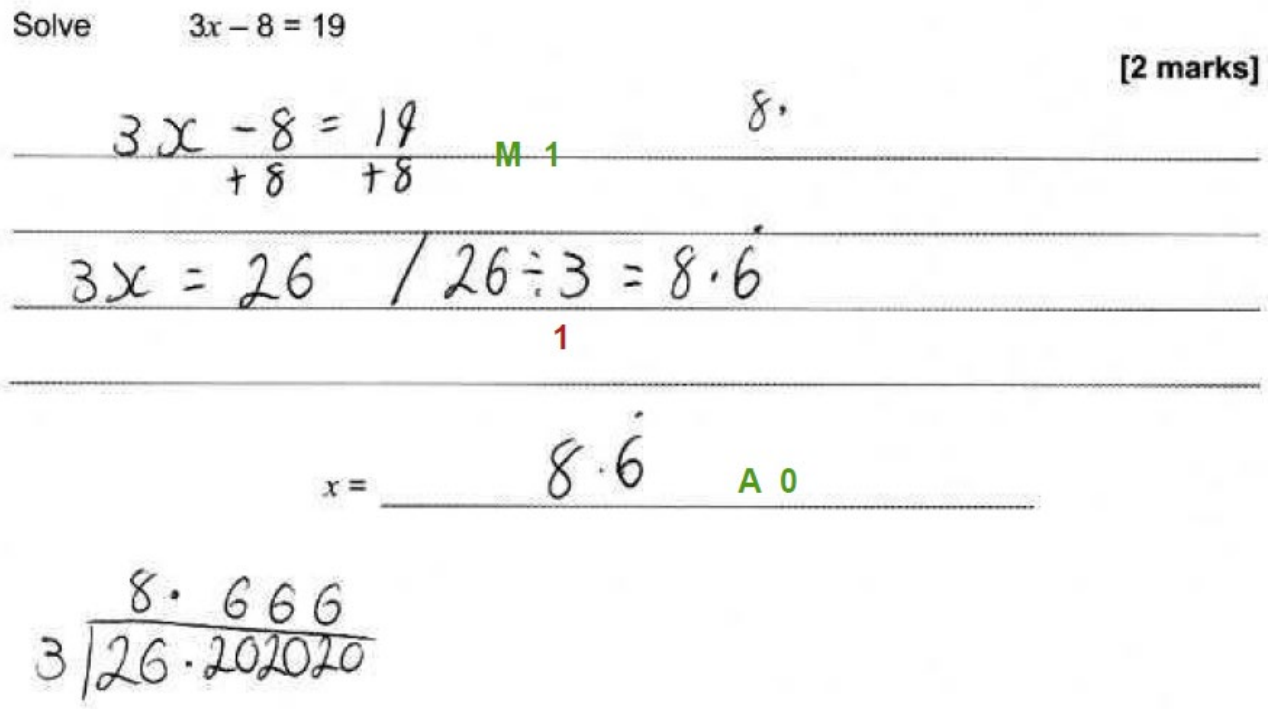


Commentary

The method is correct but the answer is not processed so the A mark is not awarded. This is a general principle to follow when marking.

1 mark

Student B



Commentary

The intention to add 8 is clearly shown even though 19 + 8 has been worked out incorrectly. Had the only working seen been $3x = 26$ this would not have been sufficient to award the method mark.
1 mark

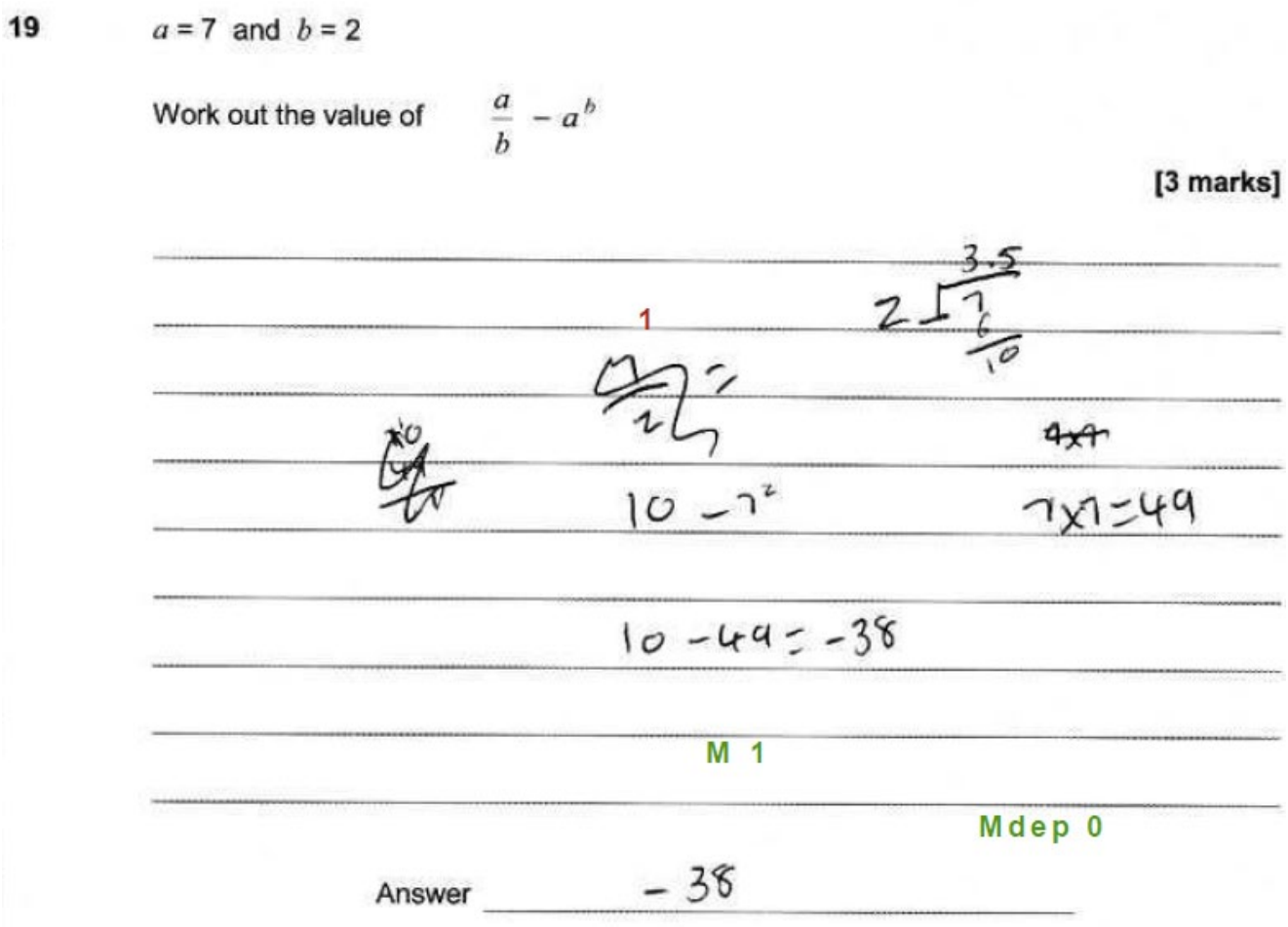
Question 19

19 $a = 7$ and $b = 2$

Work out the value of $\frac{a}{b} - a^b$

[3 marks]

Student A



Commentary

3.5 is seen and the first M mark is awarded. Subsequently the student uses 10 instead of 3.5 so the second M mark is not awarded.

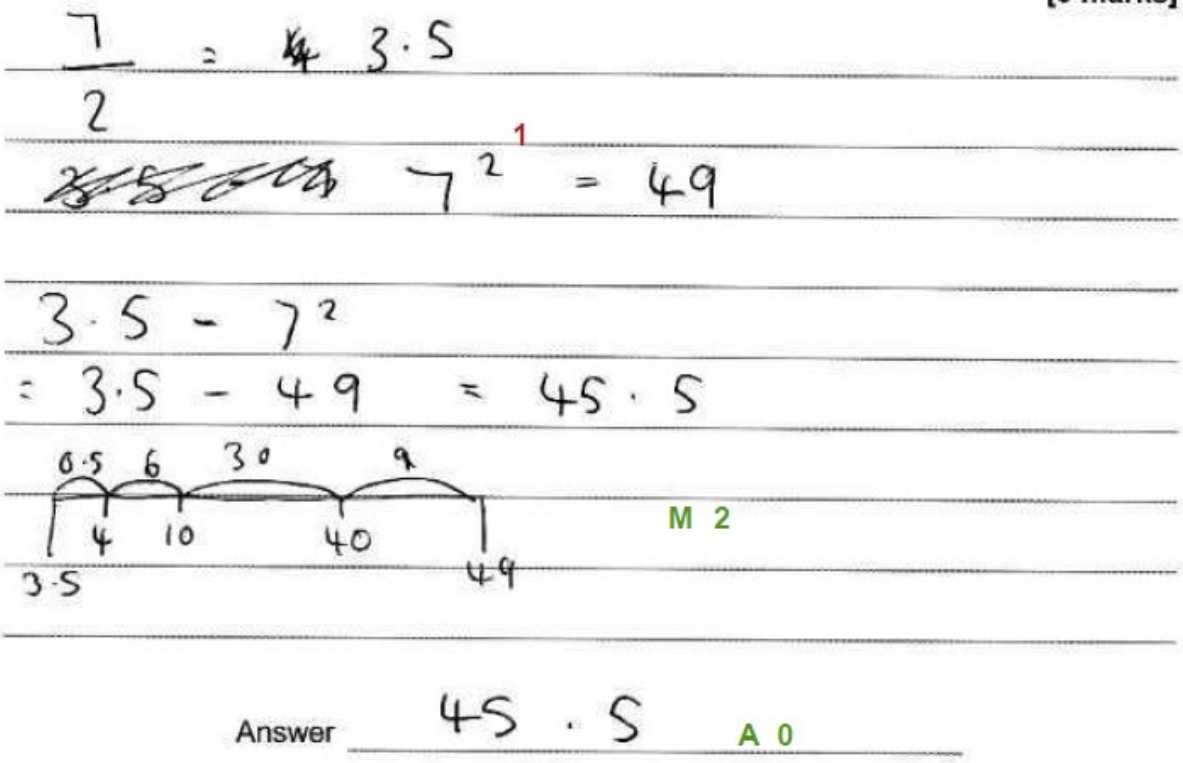
1 mark

Student B

19 $a = 7$ and $b = 2$

Work out the value of $\frac{a}{b} - a^b$

[3 marks]



Commentary

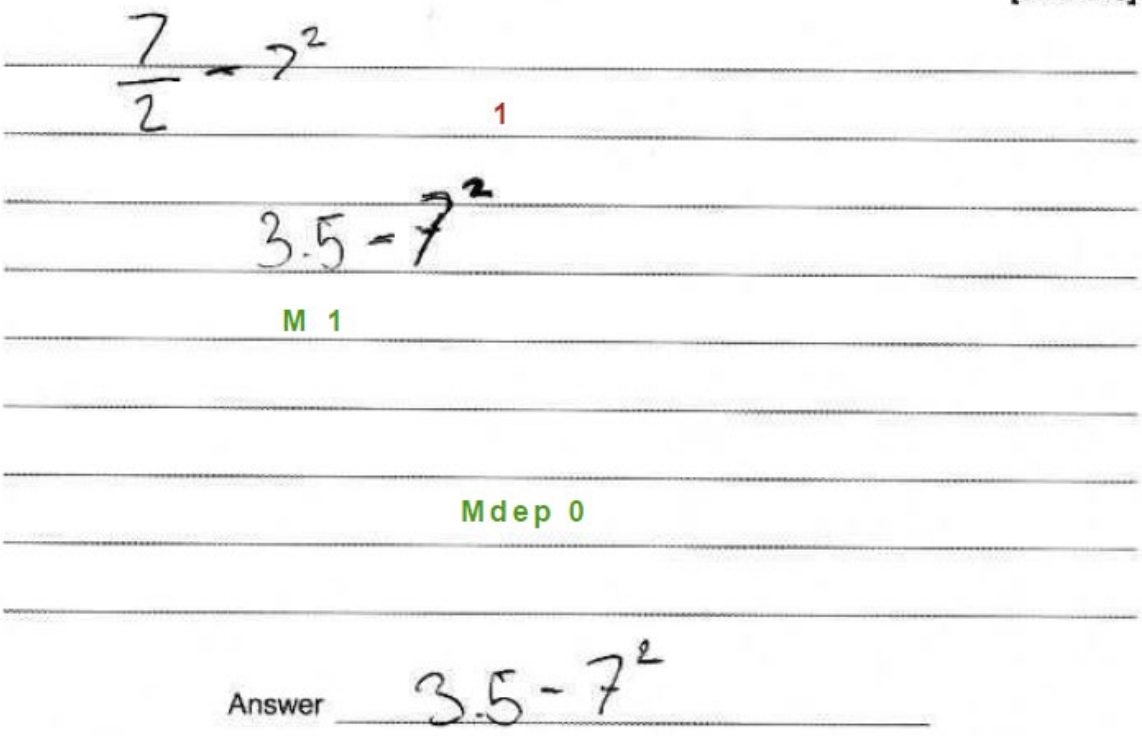
The first 2 method marks are awarded but the final answer is incorrect.
2 marks

Student C

19 $a = 7$ and $b = 2$

Work out the value of $\frac{a}{b} - a^b$

[3 marks]



Commentary

There is no incorrect working here but 7^2 has not been evaluated so only the first mark is awarded. This is also made clear in the final line of Additional Guidance which is an important part of a mark scheme.

1 mark

Question 18

No examples available

Commentary

Note how the second mark follows through (ft) from the first.
The first line of Additional Guidance provides the tolerance for the graph.

Question 19

19 The value of x can be 2 or 5

The value of y can be 3 or 12

19 (a) List the possible values of xy

[2 marks]

Answer _____

19 (b) Work out the **least** possible value of $\frac{x-y}{x}$

You **must** show your working.

[2 marks]

Answer _____

Student A

19 The value of x can be 2 or 5

The value of y can be 3 or 12

19 (a) List the possible values of xy

[2 marks]

$2 \times 3 = 6$

$2 \times 12 = 24$

$5 \times 3 = 15$

$5 \times 12 = 60$

Answer 6, 24, 15, 60

19 (b) Work out the **least** possible value of $\frac{x-y}{x}$

You **must** show your working.

[2 marks]

$2 - 12 \div 2 = -4$

$5 - 12 \div 5 = 2.6$

$2 - 3 \div 2 = 0.5$

$5 - 3 \div 5 = 4.4$

Answer -4

Commentary

(a) Values can be in any order

2 marks

(b) Student has only divided the y value by 2 each time

0 marks

Question 15

15 A line has the equation $y = x + 3$

15 (a) Write down the coordinates of the point where the line intersects the y-axis.

[1 mark]

Answer (_____ , _____)

15 (b) Write down the coordinates of the point where the line intersects the x-axis.

[1 mark]

Answer (_____ , _____)

Student A

15 (a) Write down the coordinates of the point where the line intersects the y-axis. 38

[1 mark]

Answer (-3 , 0) B0

15 (b) Write down the coordinates of the point where the line intersects the x-axis.

[1 mark]

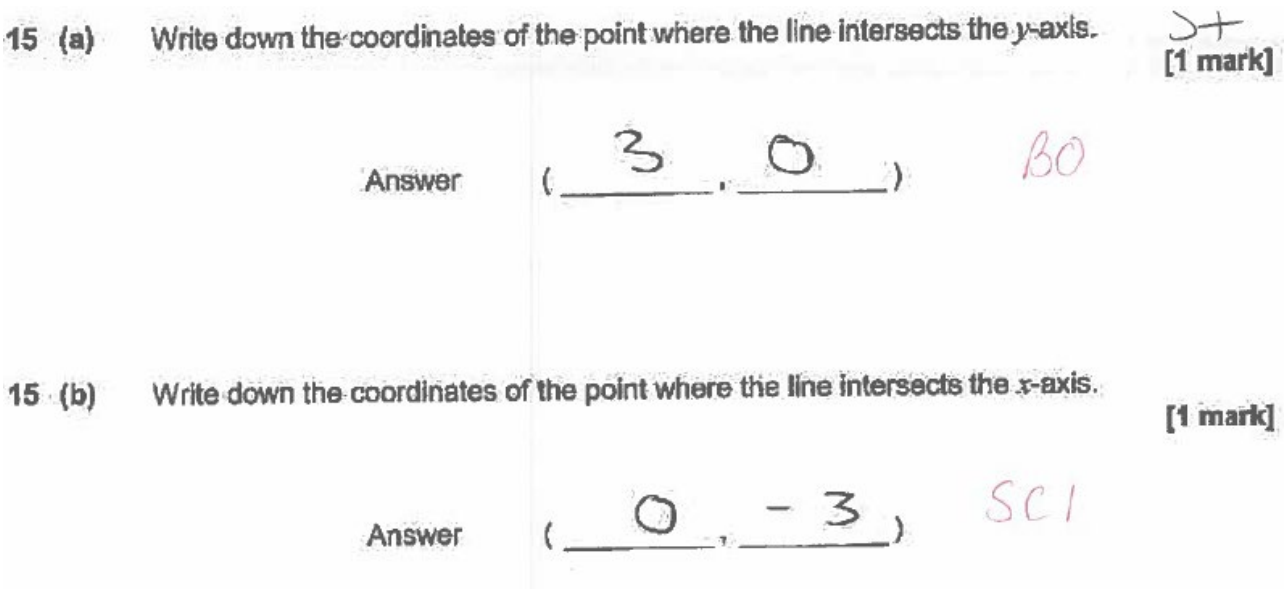
Answer (0 , 3) SC1

Commentary

Although both answers are incorrect the mark scheme in (b) has a special case (SC) and awards this pair of answers SC1

1 mark

Student B


15 (a) Write down the coordinates of the point where the line intersects the y-axis. [1 mark]

Answer (3 , 0) B0

15 (b) Write down the coordinates of the point where the line intersects the x-axis. [1 mark]

Answer (0 , −3) SC1

Commentary

Although both answers are incorrect the mark scheme in (b) has a special case (SC) and awards this pair of answers SC1

Question 10

No examples available

Commentary

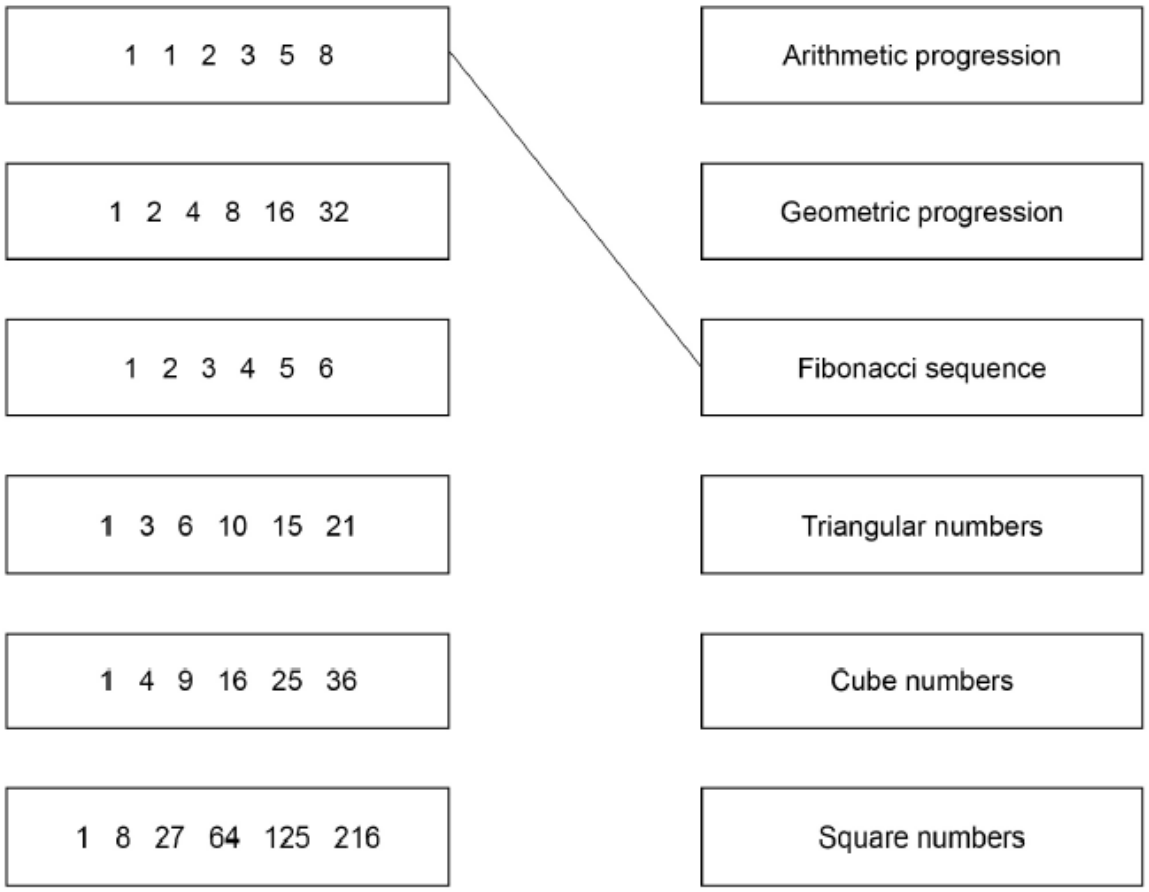
Note that a student may write their answer on the dotty line of the given sequence. If the correct number is seen here and it is not contradicted later, the 2 marks can be awarded.

Question 23

23 Match each sequence to its description.

One has been done for you.

[4 marks]

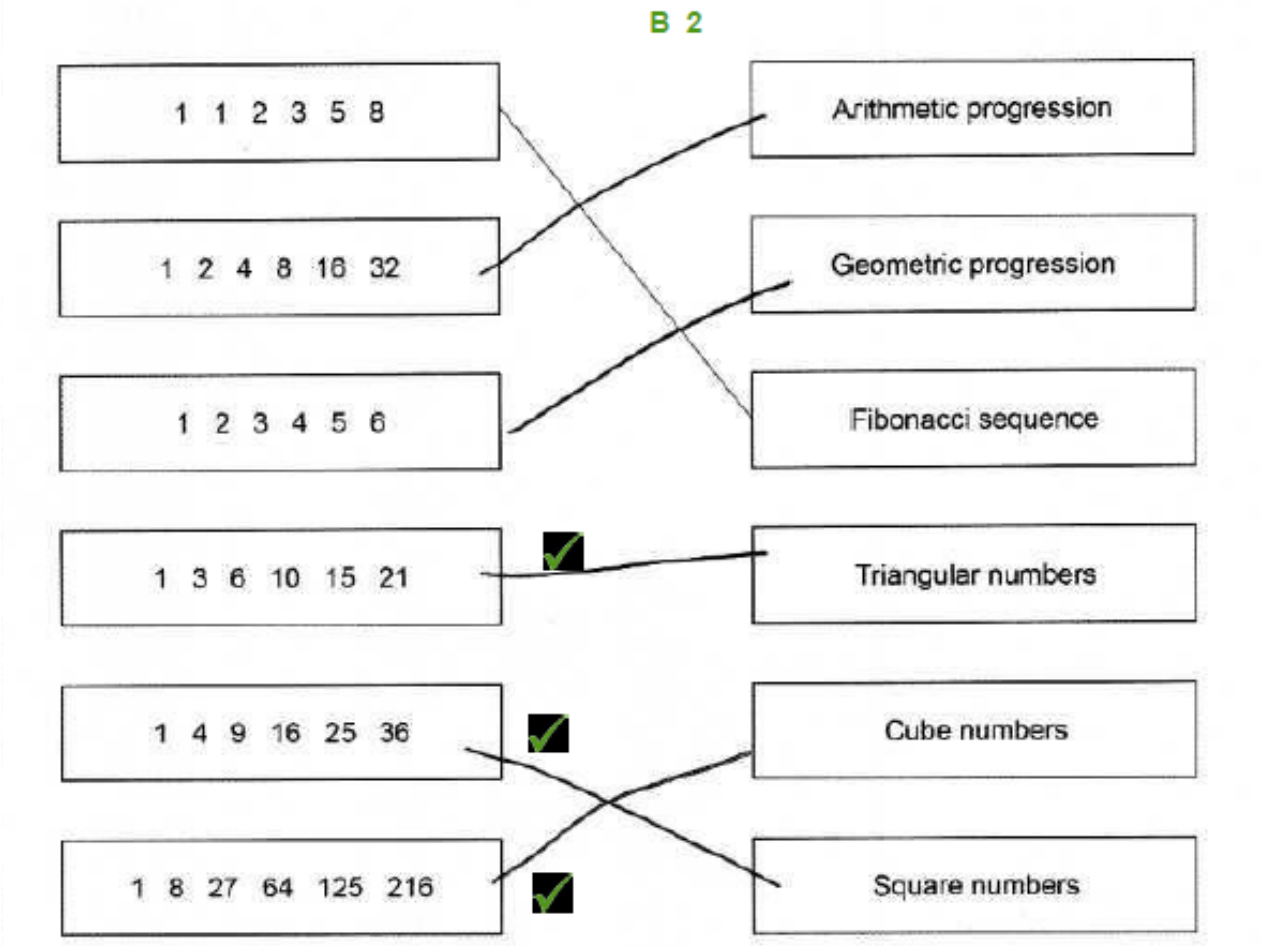


Student A

23 Match each sequence to its description.

One has been done for you.

[4 marks]



Commentary

Note that the mark scheme does not award a mark for each correct match. Also note that one match was given in the question and this is not counted as a correct match in student responses. With 3 correct matches B2 is awarded.

2 marks

Question 17

17 In a bag there are 10p coins, 20p coins and 50p coins.

There are two **fewer** 20p coins than 10p coins.

There are five **more** 50p coins than 10p coins.

17 (a) Complete the table.

[1 mark]

Coin	Number of coins
10p	n
20p	$n-2$
50p	

17 (b) Altogether, there are 60 coins.

Work out the total **value** of the 20p coins.

[4 marks]

Answer £_____

Student A

17 (a) Complete the table. [1 mark]

Coin	Number of coins
10p	n
20p	$n-2$
50p	6n

B0

17 (b) Altogether, there are 60 coins.

Work out the total value of the 20p coins. [4 marks]

Working out.

60 - 2 = 58

58 - 23 = 35

35 + 23 + 2 = 60

60 - 25 = 35

35 - 23 = 12

17 + 19 + 24 = 60 M1 M1dep

└ is the 20p coins

so value is 17 × 20p M1dep

Answer £3.40 A1

Commentary

(a) is incorrect but the approach in (b) has not used their incorrect expression from (a) so all 4 marks are still possible in (b).

(b) does not use n explicitly but 'starts again'.

The correct answer is obtained and there is no incorrect working in (b) so all 4 marks are awarded.

(a) 0 marks (b) 4 marks

Student B

17 (a) Complete the table. [1 mark]

Coin	Number of coins
10p	n
20p	$n-2$
50p	$n+5$

B1

17 (b) Altogether, there are 60 coins.

Work out the total value of the 20p coins. [4 marks]

60 coins

2 less 20ps than 10ps

5 more 50p's than 10p's

M2 19 10p's 24 50p's 17 20ps

M1dep 17 × £0.20 = 3.4

19 + 24 + 17

Answer £ 3.4 A0

Commentary

(a) is correct.

(b) leaves the answer as 3.4 and students should use correct money notation. The A mark therefore is not awarded.

(a) 1 mark (b) 3 marks

Student C

17 (a) Complete the table.

[1 mark]

Coin	Number of coins	
10p	n	
20p	$n-2$	
50p	$5n$	

B0

17 (b) Altogether, there are 60 coins.

Work out the total value of the 20p coins.

[4 marks]

$5n+n+n-2$ M1

50p = ~~£0~~

10 = 2 (60 ÷ 3 = 20) M0 dep

20p M0 dep

Answer £ 20 · 00 A0

Commentary

(a) is incorrect.

(b) uses their incorrect expression from (a). The mark scheme allows this and the first M mark is awarded. Subsequent method is incorrect.

(a) 0 marks (b) 1 mark

Question 27

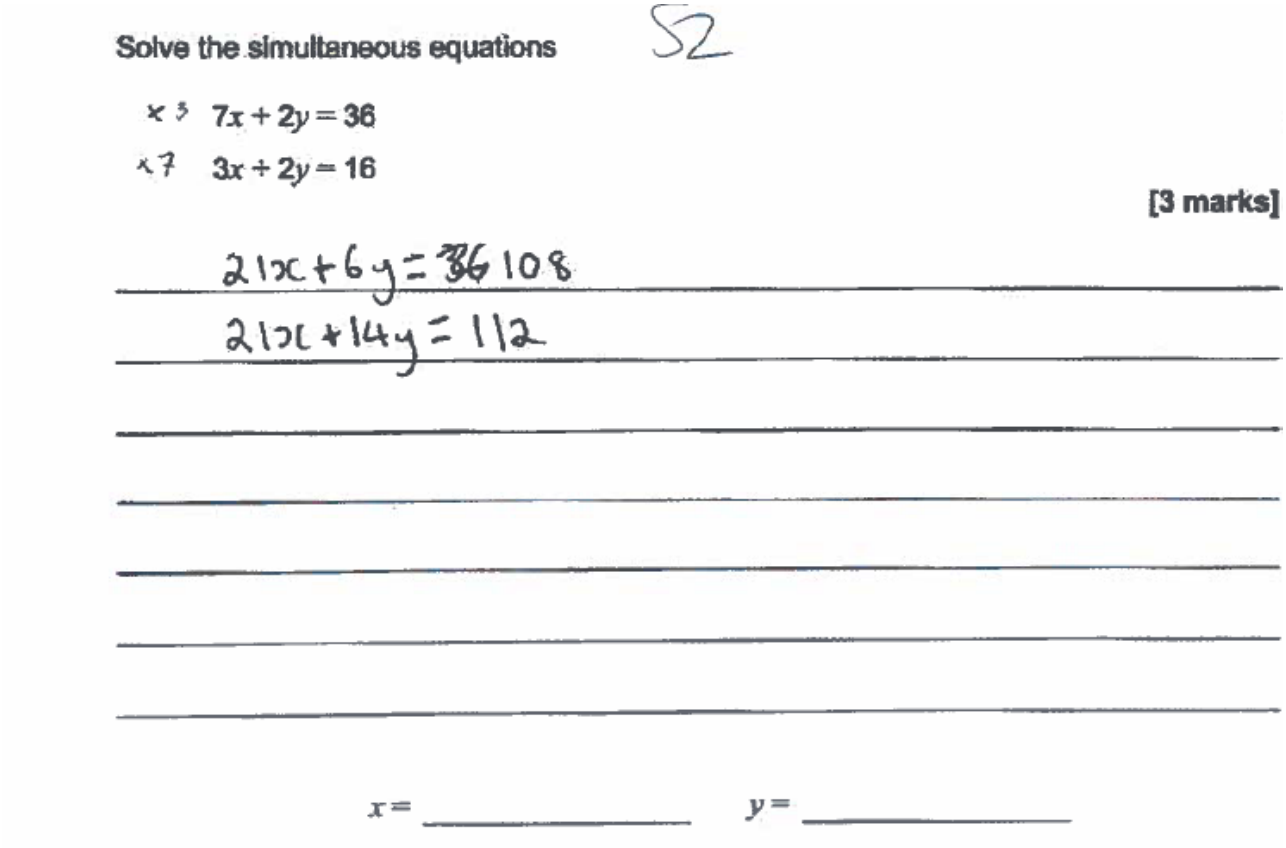
Solve the simultaneous equations

$7x + 2y = 36$

$3x + 2y = 16$

[3 marks]

Student A



Commentary

Although there is no incorrect working here, the student has not attempted to eliminate a variable.
0 marks

Student B

Solve the simultaneous equations 510

$7x + 2y = 36$

$3x + 2y = 16$

[3 marks]

$2y = 36 - 7x$ $2y = 16 - 3x$

$16 - 3x = 36 - 7x$ $4x = 20$ $x = 5$

$16 - 15 = 1$

$x =$ 5 $y =$ $\frac{1}{2}$

Commentary

Student uses Alternative Method 3. Always check the mark scheme for alternative methods.

$y = \frac{1}{2}$ is an equivalent to $y = 0.5$ (shown by oe in the mark scheme)

3 marks

Question 16

16 (a) Factorise fully $9y^3 - 6y$

[2 marks]

Answer _____

Commentary

No examples available

B2 for fully correct factorisation. B1 for incomplete but correct factorisation.
Additional Guidance has quite a lot of extra information.

Question 12

12 A straight line

has gradient 4

and

passes through the point (5, 23)

Work out the equation of the line.

Give your answer in the form $y = mx + c$

[3 marks]

Answer _____

Student A

12 A straight line

has gradient 4

and

passes through the point (5, 23)

Work out the equation of the line.

Give your answer in the form $y = mx + c$ [3 marks]

4↓ 1← (84,19)
(3,15)
(2,11)
(1,7)
(0,3) ← Y intercept = $y = mx + 3$

grad(4) = $y = 4x + 3$

3

Answer $4x+3$

Commentary

Looking at the answer line, only 2 marks are implied. However the fully correct answer appears in the working and the Additional Guidance (line 2) allows 3 marks to be awarded.

3 marks

Student B

12 A straight line

has gradient 4

and

passes through the point (5, 23)

Work out the equation of the line.

Give your answer in the form $y = mx + c$

[3 marks]

$y = 4x$

$23 = 4 \times 5 + 3$ M1

A0

A0

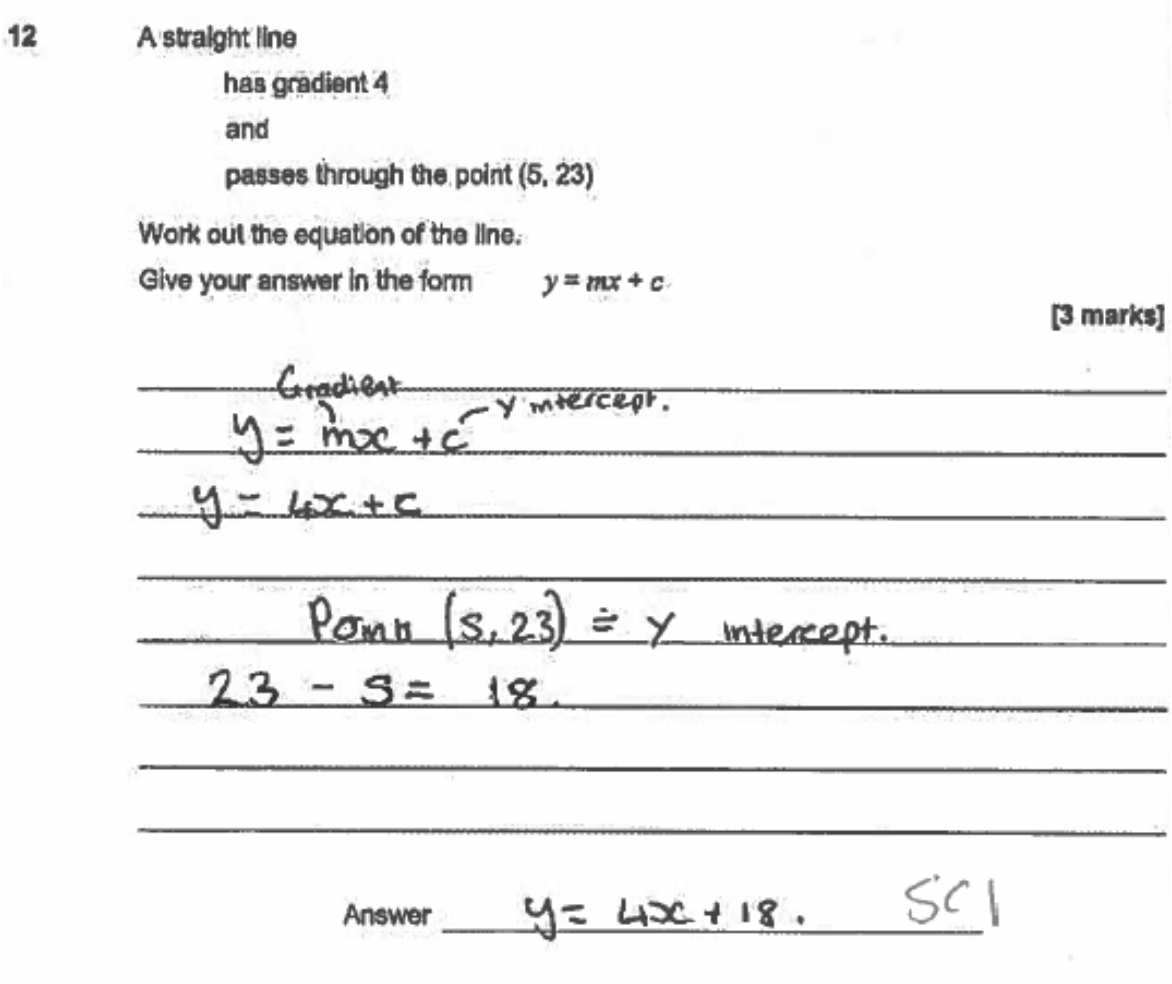
Answer $23 = 4 \times 5 + 3$

Commentary

The penultimate line of Additional Guidance awards M1A0A0 for an embedded value for c.

1 mark

Student C



12 A straight line
has gradient 4
and
passes through the point (5, 23)

Work out the equation of the line.
Give your answer in the form $y = mx + c$

[3 marks]

Gradient
$y = mx + c$ y intercept.

$y = 4x + c$

Point (5, 23) = y intercept.

$23 - 5 = 18$.

Answer $y = 4x + 18$. SC1

Commentary

The working does not gain any marks but there is a special case in the mark scheme and the answer qualifies for SC1

1 mark

Question 17

Please see the mark scheme