

GCSE Maths: Answers and commentaries

Foundation Tier – Paper 1

A closer look at the live
questions from summer 2022

v1.0



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Help prepare your GCSE students with confidence

Every year in GCSE Maths exams, students often misread, misunderstand or misinterpret questions and don't always do what the question is asking them to do.

This booklet has been designed by our curriculum experts for you to use with your students to explore real responses. Inside you'll find best practice approaches, example responses, examiner commentaries and tips on how to access more marks.

Foundation Tier – Paper 1

Question 3

3 By rounding each number to the nearest 10, estimate the value of 31×18 **[3 marks]**

Answer _____

Question 3, response 1

- 3 By rounding each number to the nearest 10, estimate the value of 31×18 [3 marks]

$$30 \times 20 = 600$$
$$3 \times 2 = 6$$

Answer 600

Commentary

This was an efficient way to answer the question. Each number has been rounded correctly, the student has dealt with the 3×2 first and then put back the zeros.

3 marks

Question 3, response 2

- 3 By rounding each number to the nearest 10, estimate the value of 31×18 [3 marks]

8

0	0	3	1
5	2	0	8
5	8		

558

Answer 560

Commentary

This student has misunderstood the idea behind the rounding instruction and only rounded once they got to the answer. As this has shown that they can round to the nearest 10, they get a SC1.

1 mark

Question 3, response 3

3 By rounding each number to the nearest 10, estimate the value of 31×18

[3 marks]

$$30 \times 20 = 60$$

$$\begin{array}{r} 30 \\ 20 \\ \hline 60 \end{array}$$

Answer 60

Commentary

This student has correctly rounded both values but not reached the correct answer after the multiplication.

2 marks

Question 3, response 4

3 By rounding each number to the nearest 10, estimate the value of 31×18

[3 marks]

$$\begin{array}{r} 40 \\ \times 20 \\ \hline 8240 \end{array}$$

Answer 8240

Commentary

This student has one correct rounding. If they had given the correct answer for their multiplication, they would have scored an additional mark.

1 mark

Question 3, response 5

3 By rounding each number to the nearest 10, estimate the value of 31×18 [3 marks]

$40 \times 20 = 800$ $40 \times$

0	8	0	7
8	9	0	0
0	0		

Answer 800

Commentary

This student did give the correct answer for their multiplication, with one rounded value correct.

2 marks

Question 3, response 6

3 By rounding each number to the nearest 10, estimate the value of 31×18 [3 marks]

31

\times	18	
	28	
	315	

Answer 63

Commentary

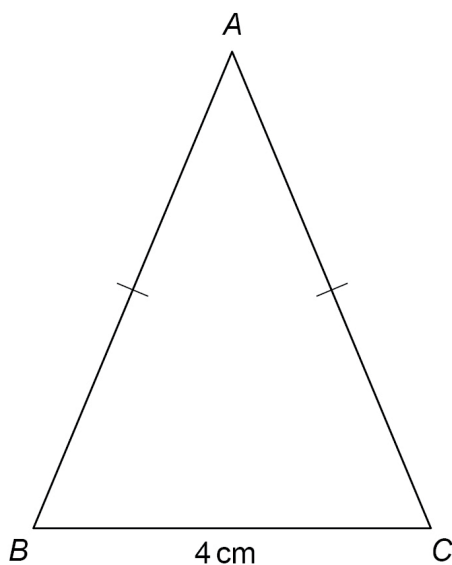
No rounding shown by this student.

0 marks

Question 4

4 In this isosceles triangle,

$$AB = AC$$



Not drawn accurately

The perimeter of the triangle is 22 cm

Work out the length of AB .

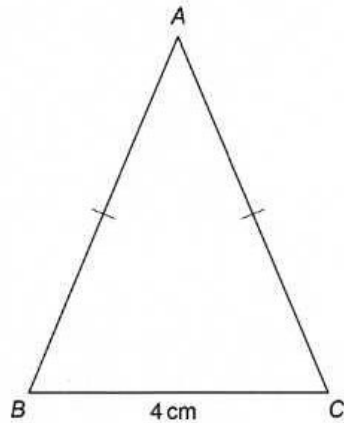
[3 marks]

Answer _____ cm

Question 4, response 1

4 In this isosceles triangle,

$$AB = AC$$



Not drawn accurately

The perimeter of the triangle is 22 cm

Work out the length of AB.

[3 marks]

$$22 - 4 = 18$$

$$18 \div 2 = 9$$

Answer 9 cm

Commentary

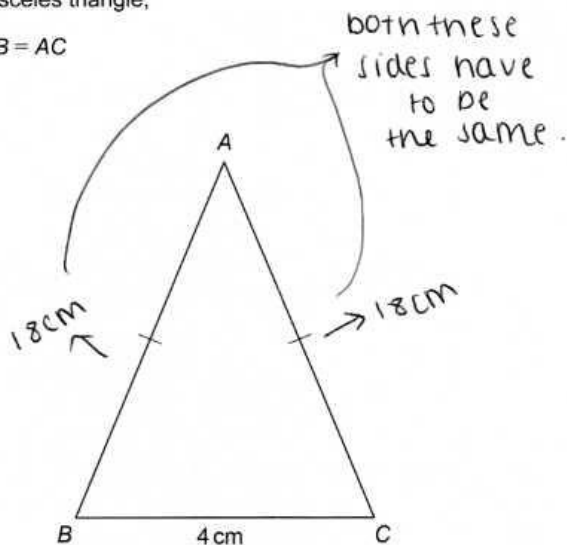
This is a very efficient answer. The base length has been subtracted and the answer then halved to give the value of each of the two missing sides.

3 marks

Question 4, response 2

4 In this isosceles triangle,

$AB = AC$



Not drawn accurately

The perimeter of the triangle is 22 cm

Work out the length of AB.

[3 marks]

both corresponding sides equal the same amount

~~if 2 sides are 18~~ whole perimeter = 22 cm

~~22~~ $22 - 4 = 18$ $\frac{18}{2} = 9$

Answer ~~18~~ 18 cm

Commentary

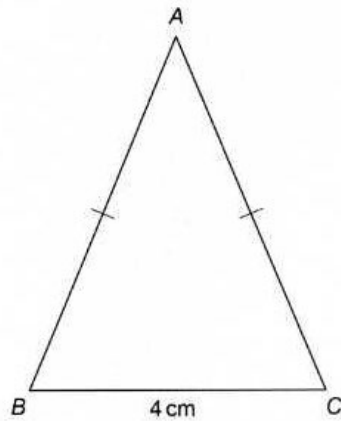
This student has started correctly but has not realised that the two remaining sides have to total 18, and so did not halve it.

1 mark

Question 4, response 3

4 In this isosceles triangle,

$$AB = AC$$



Not drawn accurately

The perimeter of the triangle is 22 cm

Work out the length of AB.

[3 marks]

$$22 - 4 = 18$$

$$18 \div 2 = 9$$

Answer 9 cm

Commentary

This student has a fully correct method, but the final answer should be 9.

2 marks

Question 5

- 5 After school, Priya will
- go running (R)
 - do her homework (H)
 - play a video game (V).
- Complete the list of the 6 possible orders in which she could do them. **[2 marks]**

RHV

Question 5, response 1

5 After school, Priya will

- go running (R)
- do her homework (H)
- play a video game (V).

Complete the list of the 6 possible orders in which she could do them.

[2 marks]

RHV
RVH
VRH
VHR
HVR
HRV

Commentary

This is a good way to approach the question. It's systematic and should limit mistakes. You can see that the question has already give the first combination. There is only one other combination that starts with R, so this is done first. Then the next start letter is chosen and the two combinations for that, before the final start letter is used.

2 marks

Question 5, response 2

- 5 After school, Priya will
- go running (R)
 - do her homework (H)
 - play a video game (V).

Complete the list of the 6 possible orders in which she could do them.

RHV
VHR
MVR
RVM
RHV
VRH

Commentary

This approach is not systematic. Unfortunately, the RHV combination that was given has been duplicated and the HRV combination is missing.

1 mark

Question 5, response 3

5

After school, Priya will

- go running (R)
- do her homework (H)
- play a video game (V).

Complete the list of the 6 possible orders in which she could do them.

RHV
HVR
RVH
VHR
HVR
VRH

Commentary

This unfortunately duplicates the HVR combination, and the HRV combination is missing, meaning we cannot award both marks.

1 mark

Question 6(a)

6 (a) Which statement is correct?

Tick **one** box.

$17 + 3 < 29 - 10$

$17 + 3 = 29 - 10$

$17 + 3 > 29 - 10$

Show working to support your answer.

[2 marks]

Question 6(a), response 1

6 (a) Which statement is correct?

Tick **one** box.

$17 + 3 < 29 - 10$

$17 + 3 = 29 - 10$

$17 + 3 > 29 - 10$

Show working to support your answer.

[2 marks]

$$\begin{array}{l} 17+3=20 \qquad 29-10=19 \\ 20 > 19 \end{array}$$

Commentary

This is nice and clear. We can see the evaluations in the working space and they have chosen the correct inequality sign.

2 marks

Question 6(a), response 2

6 (a) Which statement is correct?

Tick **one** box.

$17 + 3 < 29 - 10$

$17 + 3 = 29 - 10$

$17 + 3 > 29 - 10$

Show working to support your answer.

[2 marks]

$$\begin{array}{r}
 29 \\
 -10 \\
 \hline
 19
 \end{array}
 \quad
 \begin{array}{l}
 17 + 3 = 20 \\
 20 \text{ is greater than} \\
 19
 \end{array}$$

Commentary

The working is clear in the working space but they didn't tick the correct option.

1 mark

Question 6(a), response 3

6 (a) Which statement is correct?

Tick **one** box.

$17 + 3 < 29 - 10$

$17 + 3 = 29 - 10$

$17 + 3 > 29 - 10$

Show working to support your answer.

[2 marks]

because it easts the biggest sum

Commentary

There is no working here, and it is not the correct option that has been ticked.

0 marks

Question 6(a), response 4

6 (a) Which statement is correct?

Tick **one** box.

$17 + 3 < 29 - 10$

$17 + 3 = 29 - 10$

$17 + 3 > 29 - 10$

Show working to support your answer.

[2 marks]

$17 + 3 = 20 \text{ is less than } 29 - 10 = 9$

$17 + 3 = 20 \text{ is the same as } 29 - 10 = 9$

Commentary

One of the evaluations is incorrect but the correct option has been chosen for their values.

1 mark

Question 6(b)

6 (b) Work out $60 \div 2 + 4$

[2 marks]

Answer _____

Question 6(b), response 1

6 (b) Work out $60 \div 2 + 4$

[2 marks]

$$60 \div (2+4) \quad 2+4 = \frac{6}{60} = 10$$

Answer 10**Commentary**

Correct priority of operations has not been followed; the divide should be done first.

0 marks

Question 6(b), response 2

6 (b) Work out $60 \div 2 + 4$

[2 marks]

$$60 \div 2 = 30$$

$$30 + 4 = 34$$

Answer 34**Commentary**

This is a great example. The calculations are done separately so the student can see how far they've got.

2 marks

Question 6(b), response 3

6 (b) Work out $60 \div 2 + 4$

[2 marks]

~~60~~

$60 \div 2 + 4$

$60 \div 2 = -30$ ~~$2 + 4 = 6$~~ ~~$60 \div 6$~~ $-30 + 4 = -26$

Answer -26

Commentary

The student has the correct method but the value of -30 is not correct. We can award a mark for fully correct method and ignore the incorrect value seen in the middle.

1 mark

Question 6(b), response 4

6 (b) Work out $60 \div 2 + 4$

[2 marks]

B
I
D

$30 + 6$

Answer 36

Commentary

Priority of operations has not been followed correctly here. There's a correct first step that gets to the 30, but then the 2 is used again and added along with the 4.

1 mark

Question 7, response 1

7

	Cost of 100 grams
Cereal	49p
Pasta	14p

Leah buys 400 grams of cereal and 250 grams of pasta.

Work out the **total** cost in £

[4 marks]

$4 \times 0.49 = \underline{\underline{1.96}}$ $14 \div 2 = 7$

$$\begin{array}{r} 0.49 \\ \times 4 \\ \hline 1.96 \end{array}$$

$$\begin{array}{r} 0.14 \\ + 0.14 \\ \hline 0.28 \end{array}$$

$$\begin{array}{r} 0.28 \\ + 0.07 \\ \hline 0.35 \end{array}$$

$$\begin{array}{r} 1.96 \\ + 0.35 \\ \hline 2.31 \end{array}$$

Answer £ 2.31

Commentary

A nice example of clearly laid out work. The student has started by converting to £ and then worked out the prices for cereal and pasta, before adding them for a total.

4 marks

Question 7, response 2

7

	Cost of 100 grams
Cereal	49p
Pasta	14p

Leah buys 400 grams of cereal and 250 grams of pasta.

Work out the **total** cost in £

[4 marks]

$$\text{Cereal} = \text{£} 49\text{p} \quad 49\text{p} \times 4 = \text{£} 12.96$$

$$\text{Pasta} = 14\text{p} \quad 14 \times 250\text{g} \quad \begin{array}{r} 14 \\ 14 \\ \hline 28 \end{array} \quad 28 + 7 = 34\text{p}$$

$$\text{Cereal total} = \text{£} 12.96 \quad \text{Pasta total} = 34\text{p}$$

Answer £ 2.30

Commentary

The method for this is fully correct, but the price for the pasta is incorrect.

3 marks

Question 7, response 4

7

	Cost of 100 grams
Cereal	49p
Pasta	14p

Leah buys 400 grams of cereal and 250 grams of pasta.

Work out the **total** cost in £

[4 marks]

$$\begin{array}{r}
 400 \\
 \times 49 \\
 \hline
 1640 \\
 1640 \\
 \hline
 3200 \\
 1640 \\
 \hline
 3293
 \end{array}$$

$$\begin{array}{r}
 250 \\
 \times 14 \\
 \hline
 1000 \\
 1000 \\
 \hline
 1250
 \end{array}$$

$$\begin{array}{r}
 3293 \\
 + 1250 \\
 \hline
 4543
 \end{array}$$

Answer £ 45.48

Commentary

The 49 should be multiplied by 4, not by 400. Student is working with a cost of 49p for 1 g, not 100 g.

0 marks

Question 8(a)

- 8 (a)** For a set of five numbers,
the mode is 8
the median is 12

Work out **one** possible set of five numbers.

[2 marks]

Answer _____

Question 8(a), response 1

- 8 (a) For a set of five numbers,
the mode is 8
the median is 12

Work out **one** possible set of five numbers.

[2 marks]

Answer 5 3 12 2 1

Commentary

Although the 12 is in the middle space, it's not the middle number if you put the numbers in order. For the median to be 12, the 12 has to be the middle value when the numbers are in order.

This was a very common mistake.

There are no 8s here, so no mode of 8.

0 marks

Question 8(a), response 2

- 8 (a) For a set of five numbers,
the mode is 8
the median is 12

Work out **one** possible set of five numbers.

[2 marks]

8 , 8 , 12 , 8 , 8

Answer 8 8 12 8 8

Commentary

Just as before, this is not a median of 12 but we do have a mode of 8.

1 mark

Question 8(a), response 4

- 8 (a) For a set of five numbers,
the mode is 8
the median is 12

Work out **one** possible set of five numbers.

[2 marks]

_____ 14

_____ 8 12 7 ~~14~~ 16

Answer 7 8 12 14 16

Commentary

The median is correct but we do not have a mode of 8.

1 mark

Question 9

9

Shona has 14 dresses.

50% of these dresses are red.

She gives 5 of her red dresses to a charity shop.

She buys 1 new red dress.

What percentage of the dresses she has now are red?

[4 marks]

Answer _____ %

Question 9, response 1

9 Shona has 14 dresses.

50% of these dresses are red.

She gives 5 of her red dresses to a charity shop. -7

She buys 1 new red dress. $+1$

What percentage of the dresses she has now are red?

[4 marks]

$$50\% \text{ of } 14 = 7 + 1 = 8$$
$$8 - 5 = 3 \text{ Red dress}$$

$$7 + 3 = 10 \quad \frac{3}{10} = 30$$

Answer _____ 30 %

Commentary

This is a good example of the student labelling where they are up to, so they can keep track.

A common mistake in this question was to not realise that there were 10 dresses left, not the original 14 and the labelling here has helped to keep track of how many dresses there are.

4 marks

Question 9, response 2

- 9 Shona has 14 dresses.
 50% of these dresses are red.
 She gives 5 of her red dresses to a charity shop.
 She buys 1 new red dress.
 What percentage of the dresses she has now are red? [4 marks]

$$\begin{array}{r}
 7 \text{ Red dresses} = 50\% \quad \begin{array}{r} 7-5 \\ \hline \end{array} \\
 \downarrow \\
 2 \text{ Red Dresses} \quad \begin{array}{r} 14 \\ 2 \overline{) 42} \\ \hline 42 \\ \hline \end{array} \quad \begin{array}{r} 0.4.66 \\ 3 \overline{) 14.00} \\ \hline 12 \\ \hline 20 \\ \hline 18 \\ \hline 20 \\ \hline 18 \\ \hline 20 \\ \hline 18 \\ \hline 20 \\ \hline 18 \\ \hline 20 \\ \hline \end{array} \\
 \downarrow \\
 3 \text{ Red dresses} \quad \begin{array}{r} 4.2 \\ +1 \\ \hline 5.2 \\ \hline \end{array} \quad 1.4 \times 3 = 4.2 \\
 \hline
 14 \div 3 = \cancel{4.66} \quad \cancel{4.6} \times 100 = \cancel{46} \quad 4.2 \times 100 = 42 \\
 \hline
 \text{Answer } \quad \cancel{46} \quad 42 \quad \%
 \end{array}$$

Commentary

This student has correctly worked out that there are 3 red dresses, but not kept track of

how many dresses there are in total. If they had correctly converted $\frac{3}{14}$ to a percentage, they could have had an extra mark.

2 marks

Question 9, response 3

9 Shona has 14 dresses.

➤ 50% of these dresses are red.

She gives 5 of her red dresses to a charity shop.

She buys 1 new red dress.

What percentage of the dresses she has now are red?

[4 marks]

~~7 dress~~ > red ones - 5 = 2 red
+ 1 = 3 red

> normal = $\frac{3}{10}$
3 red

50 = 5

Answer ~~20~~ 3 %

Commentary

Here, the student has correctly found that there are 3 red dresses and 10 dresses in total, giving $\frac{3}{10}$ red dresses. The only error was not to turn this into a percentage.

3 marks

Question 9, response 4

- 9 Shona has 14 dresses.
 50% of these dresses are red.
 She gives 5 of her red dresses to a charity shop.
 She buys 1 new red dress.

What percentage of the dresses she has now are red?

[4 marks]

~~$14 \div 2 = 7$~~

$14 - 5 = 9$ red clothes she has
 $9 + 1 = 10$

Answer 90 %

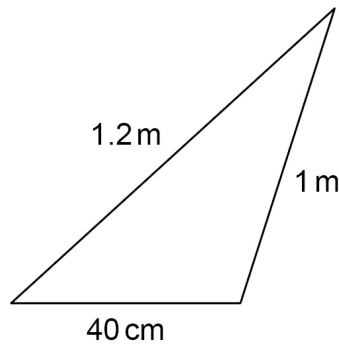
Commentary

The student has correctly worked out that there will be 10 dresses at the end, so they get 1 mark.

1 mark

Question 10(a)

10 (a) Here is a triangle.



Not drawn accurately

Work out $\frac{\text{length of shortest side}}{\text{length of longest side}}$

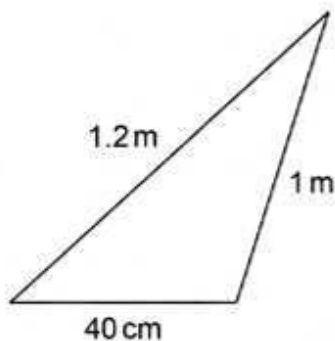
Give your answer as a fraction in its simplest form.

[2 marks]

Answer _____

Question 10(a), response 1

10 (a) Here is a triangle.



Not drawn accurately

Work out $\frac{\text{length of shortest side}}{\text{length of longest side}}$

Give your answer as a fraction in its simplest form.

[2 marks]

$$\frac{40}{120} = \frac{4}{12} = \frac{1}{3}$$

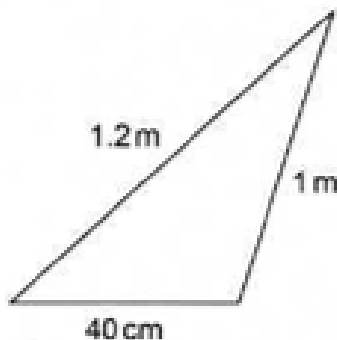
Commentary

We can see the correct conversion from 1.2 m to 120 cm. The correct two sides are used and it has been correctly simplified.

2 marks

Question 10(a), response 2

10 (a) Here is a triangle.



Not drawn accurately

Work out $\frac{\text{length of shortest side}}{\text{length of longest side}}$

Give your answer as a fraction in its simplest form.

[2 marks]

Longest - 1.2m
Shortest - 40cm

$$\frac{1.2}{40}$$

Answer $\frac{1.2}{40}$

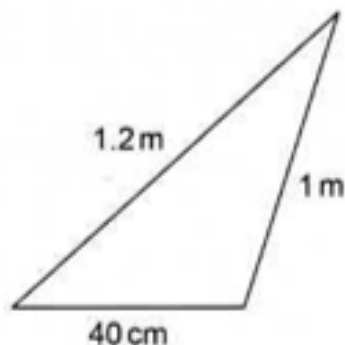
Commentary

Whilst we have the correct two sides being used, there is no conversion and the lengths need to be in the same unit to be able to cancel the fraction.

0 marks

Question 10(a), response 3

10 (a) Here is a triangle.



Not drawn accurately

Work out $\frac{\text{length of shortest side}}{\text{length of longest side}}$

Give your answer as a fraction in its simplest form.

[2 marks]

$$1.2\text{m} \quad 40\text{cm} = 0.4\text{m}$$

$$1.2 \div 0.4$$

$$0.3$$

Answer

$$\frac{0.3}{1.2}$$

Commentary

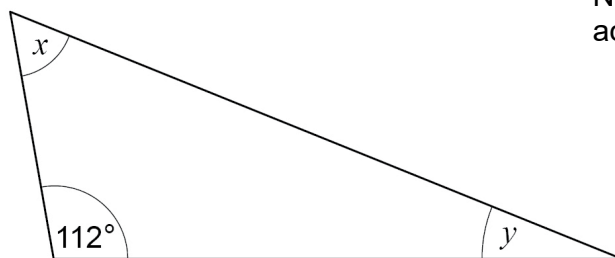
There is a correct conversion here from 40 cm to 0.4 m.

It's more difficult to cancel the fraction if there are decimals involved, so it would make it easier if both were in cm instead of m. The conversion has been awarded a mark.

1 mark

Question 10(b)

10 (b) Here is a different triangle.



Not drawn accurately

$$x = 3y$$

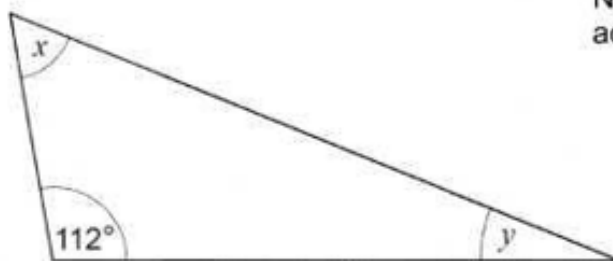
Work out the size of angle y .

[3 marks]

$$y = \underline{\hspace{10em}}^\circ$$

Question 10(b), response 1

10 (b) Here is a different triangle.



Not drawn accurately

$$x = 3y$$

Work out the size of angle y .

[3 marks]

112

$$360 - 112 = 248 \div 3 = 82$$

$$y = 43^\circ$$

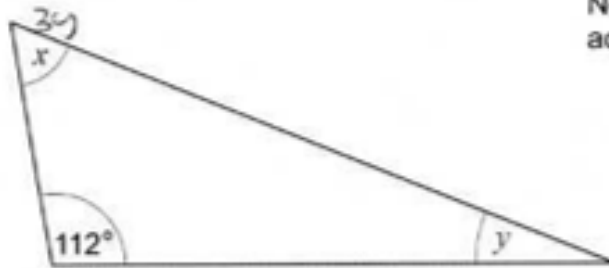
Commentary

It was fairly common to see 360° used instead of 180° . This misconception meant that no marks could be awarded.

0 marks

Question 10(b), response 2

10 (b) Here is a different triangle.



Not drawn accurately

$$x = 3y$$

Work out the size of angle y .

[3 marks]

$$\begin{array}{r} 6y \\ 180 - 42 \\ \hline 112 \\ 068 \end{array}$$

$$y = 65^\circ$$

Commentary

This is a correct first step, to subtract the given angle from 180° . The student has not gone any further.

1 mark

Question 10(b), response 3

10 (b) Here is a different triangle.



Not drawn accurately

$$x = 3y$$

Work out the size of angle y .

[3 marks]

$$180^\circ - 112^\circ = 68^\circ$$

~~68~~

68

22.66

$$3 \mid 68.000$$

$$y = 22.6^\circ$$

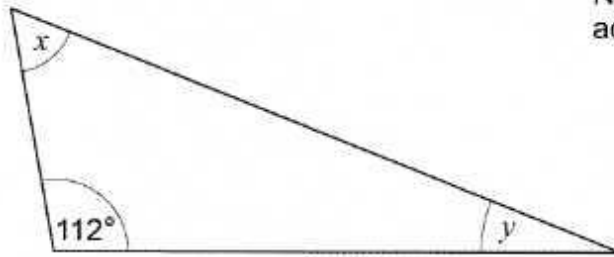
Commentary

This is a correct first step but the student should then have divided by 4, not by 3. It was very common to see students divide by 3.

1 mark

Question 10(b), response 4

10 (b) Here is a different triangle.



Not drawn accurately

$$x = 3y$$

Work out the size of angle y .

[3 marks]

Handwritten student work on lined paper:

$$x = 34$$

$$\frac{180}{112} = 0.68^\circ$$

$$180 - 112 = 68^\circ$$

$$68 \div 3 = 22.2^\circ$$

$$x = 51^\circ$$

$$3 \overline{) 68.2} = 22.2$$

$$4 \overline{) 68} = 17$$

$$\times \frac{17}{3} = \frac{51}{2}$$

$y = \underline{\quad 17 \quad}^\circ$

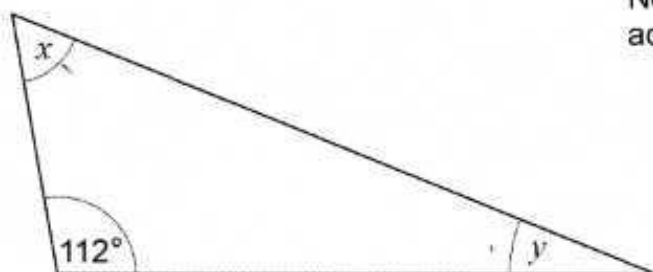
Commentary

Correct first step and then the divide by 3 has been corrected to be divide by 4, getting to the correct final answer.

3 marks

Question 10(b), response 5

10 (b) Here is a different triangle.



Not drawn accurately

$$x = 3y$$

Work out the size of angle y .

[3 marks]

$$\begin{array}{r} 17 \\ \times 3 \\ \hline 51 \\ 51 \\ \hline 51 \end{array}$$

$$\begin{array}{r} 112 \\ \times 3 \\ \hline 336 \\ 336 \\ \hline 336 \end{array}$$

$$x = 17 \quad y = 17 \times 3 = 51$$

$$y = 51^\circ$$

Commentary

The working here is all correct but at the end, the wrong value out of 51 and 17 has been chosen for the final answer, so the final mark cannot be awarded.

2 marks

Question 11(a)

- 11** Companies A and B sell insurance for mobile phones.
The table shows the **monthly** costs for two types of cover, Damage and Loss.

Company	Damage	Loss
A	£8.65	£12.20
B	£7.25	£14.10

- 11 (a)** Work out the difference in monthly cost for the two types of cover with **Company A**.

[2 marks]

Answer £ _____

Question 11(a), response 1

- 11 Companies A and B sell insurance for mobile phones.
The table shows the **monthly** costs for two types of cover, Damage and Loss.

Company	Damage	Loss
A	£8.65	£12.20
B	£7.25	£14.10

- 11 (a) Work out the difference in monthly cost for the two types of cover with **Company A**.

[2 marks]

$$\begin{array}{r}
 12.20 \\
 - 8.65 \\
 \hline
 3.55
 \end{array}$$

Answer £ 3.55

Commentary

The correct two values have been chosen from the table and the answer comes from the subtraction.

2 marks

Question 11(a), response 2

- 11 Companies A and B sell insurance for mobile phones.
The table shows the **monthly** costs for two types of cover, Damage and Loss.

Company	Damage	Loss
A	£8.65	£12.20
B	£7.25	£14.10

- 11 (a) Work out the difference in monthly cost for the two types of cover with **Company A**.

[2 marks]

$$\begin{array}{r} \overset{\circ}{\underset{\circ}{\text{£}}}\overset{\text{'}}{\underset{\text{'}}{12.20}} - \\ \text{£ } 8.65 \\ \hline \text{£ } 3.45 \end{array}$$

Answer £ 3.45

Commentary

The correct two values have been chosen from the table but the final answer is not correct.

1 mark

Question 11(a), response 3

- 11 Companies A and B sell insurance for mobile phones.
The table shows the **monthly** costs for two types of cover, Damage and Loss.

Company	Damage	Loss
A	£8.65	£12.20
B	£7.25	£14.10

- 11 (a) Work out the difference in monthly cost for the two types of cover with **Company A**.

[2 marks]

$$\begin{array}{r}
 8.65 \\
 + 12.20 \\
 \hline
 20.85
 \end{array}$$

Answer £ ~~10.55~~ 20.85

Commentary

The correct values are chosen from the table but unfortunately, addition took place instead of subtraction.

0 marks

Question 11(a), response 4

- 11 Companies A and B sell insurance for mobile phones.
The table shows the **monthly** costs for two types of cover, Damage and Loss.

Company	Damage	Loss
A	£8.65	£12.20
B	£7.25	£14.10

- 11 (a) Work out the difference in monthly cost for the two types of cover with **Company A**.

[2 marks]

$$\begin{aligned} A &= \text{£}8.65 + \text{£}12.20 = \text{£}20.85 \\ B &= \text{£}7.25 + \text{£}14.10 = \text{£}21.35 \\ \text{£}21.35 - \text{£}20.85 &= \text{£}1.50 \end{aligned}$$

Answer £ 1.50

Commentary

It was not uncommon to see the totals calculated for each of A and B and the difference between those values found.

0 marks

Question 11(b)

11 (b) Ben wants Damage cover with **Company B**.

How much in total will he pay for one **year**?

[3 marks]

Answer £ _____

Question 11(b), response 1

11 (b) Ben wants Damage cover with **Company B**.

How much in total will he pay for one year?

[3 marks]

Handwritten working on lined paper:

7.25

0	7	0	2	0	5	1	
8	1	4	0	4	1	0	2

2.00

0

£87.00

Answer £ 87.00

Commentary

The student has taken the correct value from the table and has a correct understanding that it needed to be multiplied by 12, to get a yearly cost.

The working is neatly set out and easy to follow. Correct final answer.

3 marks

Question 11(b), response 2

11 (b) Ben wants Damage cover with **Company B**.

How much in total will he pay for one year?

[3]

$$7.25 \times 12 = 8700$$

x	10	2	
700	7000	1400	7000
20	200	40	1400
5	50	10	200
			+ 40
			50
			0
			8700

Answer £ 8700

Commentary

The only error made here was to forget to put the decimal point back in.

2 marks

Question 11(b), response 3

11 (b) Ben wants Damage cover with **Company B**.

How much in total will he pay for one year?

[3 marks]

Damage = 7.25 (a month) loss = 14.10 (a month)

$$\begin{array}{r} 7.25 \\ \times 12 \\ \hline 14.50 \\ 72.50 \\ \hline 87.00 \end{array}$$

Damage per year = 87

$$\begin{array}{r} 14.10 \\ \times 12 \\ \hline 28.20 \\ 141.00 \\ \hline 169.20 \end{array}$$
$$\begin{array}{r} 169.20 \\ + 87.00 \\ \hline 256.20 \end{array}$$

Answer £ 256.20

Commentary

Here we see an incorrect value being used from the table, but the student does have an understanding that the value needed to be multiplied by 12.

The multiplication is correct.

2 marks

Question 11(b), response 4

11 (b) Ben wants Damage cover with **Company B**.

How much in total will he pay for one year?

$$\begin{array}{r}
 7.25 \\
 \times 12 \\
 \hline
 14.50 \\
 72.50 \\
 \hline
 87.00
 \end{array}$$

Answer £ ~~87~~ £87

Commentary

Well set-out work with the correct place value when multiplying by the 10.

3 marks

Question 11(b), response 5

11 (b) Ben wants Damage cover with **Company B**.

How much in total will he pay for one **year**?

Company B Damage cover =
7.25 monthly
7.25 x Year =

$£7 \times 12 = 84$
 $0.25 \times 12 = £3 = £87$

Answer £ 87

Commentary

This student has chosen to split the 7 from the 0.25 and multiply each by 12 and then total them. No mistakes were made and it's easy to follow the working, for the student and the person marking it.

3 marks

Question 11(b), response 6

11 (b) Ben wants Damage cover with **Company B**.

How much in total will he pay for one **year**?

$$\begin{array}{r}
 70.25 \times 12 \\
 70.25 \\
 70.25 \\
 \hline
 210.75 \\
 70.25 \\
 \hline
 281.00
 \end{array}$$

Answer £ 65.25

Commentary

This student knew that they needed to multiply by 12, but only in fact multiplied by 6.

1 mark

Question 11(b), response 7

11 (b) Ben wants Damage cover with **Company B**.

How much in total will he pay for one year?

[3 marks]

$$\begin{array}{r} 7.25 + 14.10 = 21.35 \\ 21.35 \times 12 = \end{array}$$
$$\begin{array}{r} 21.35 \\ \times 12 \\ \hline 42.80 \\ 213.50 \\ \hline 256.30 \end{array}$$

Answer £ 256.30

Commentary

This is not the correct value to be multiplied by 12, but shows the understanding of the need to multiply by 12. The multiplication has not been done correctly.

1 mark

Question 12

12Work out $\frac{11}{18} - \frac{1}{3}$ **[2 marks]**

Answer _____

Question 12, response 1

12

Work out $\frac{11}{18} - \frac{1 \times 6}{3 \times 6}$

$$\frac{11}{18} - \frac{6}{18} = \frac{5}{18}$$

Answer $\frac{5}{18}$

Commentary

This is a perfect example of how to answer the question. A common denominator of 18 can be used, so only the second fraction needs to be changed.

2 marks

Question 12, response 2

12 Work out $\frac{11}{18} - \frac{1}{3}$

$$\frac{11}{18} - \frac{1}{3} = \frac{33-18}{54}$$

$$\frac{11}{18} \times \frac{3}{3} = \frac{33}{54}$$

$$\frac{1}{3} \times \frac{18}{18} = \frac{18}{54}$$

$$\frac{33}{54} - \frac{18}{54} = \frac{15}{54}$$

Answer $\frac{15}{54}$

Commentary

This is a perfect example of how you can answer the question. 54 is an appropriate choice for a common denominator. Both fractions needs to change before the subtraction can take place. The question doesn't ask for simplification, so it's perfectly ok to leave it like this.

2 marks

Question 12, response 3

12 Work out $\frac{11}{18} - \frac{1}{3}$

$$\frac{11}{18} - \frac{1}{3} = \frac{10}{15}$$

Answer $\frac{10}{15}$

Commentary

This is the most common mistake on a fraction question, not to get a common denominator. If there's no common denominator, there can be no progress in the question.

0 marks

Question 12, response 4

12

Work out $\frac{11x+1}{18x+3}$

$$\frac{11 \times 1}{18 \times 1} - \frac{1 \times 6}{3 \times 6} = \frac{11}{18} - \frac{6}{18} = \frac{4}{18} = \frac{2}{9}$$

Answer $\frac{4}{18} \quad \frac{2}{9}$ **Commentary**

The question can progress because we have two correct fractions over a common denominator but the subtraction isn't correct.

1 mark

Question 12, response 5

12 Work out $\frac{11}{18} - \frac{1}{3}$

$$\frac{11 \times 3}{18 \times 3} - \frac{1 \times 18}{3 \times 18} = \frac{39}{54} - \frac{18}{54} = \frac{21}{54}$$

Answer 21/54

Commentary

The 54 is an appropriate choice for a common denominator. The 18 is a correct numerator but the 39 is not.

1 mark

Question 13(a)

13 (a) The term-to-term rule for a sequence is

multiply by 2

The 3rd term of the sequence is 46

Work out the 1st term.

Give your answer as a decimal.

[3 marks]

Answer _____

Question 13(a), response 1

13 (a) The term-to-term rule for a sequence is

multiply by 2

The 3rd term of the sequence is 46

Work out the 1st term.

Give your answer as a decimal.

[3 marks]

$$\begin{array}{r} 11.1 \quad 23 \quad 46 \\ \hline \end{array}$$
$$\begin{array}{r} 23 \\ 2 \overline{)46} \\ \hline \end{array}$$
$$\begin{array}{r} 11.1 \\ 2 \overline{)23} \\ \hline \end{array}$$
$$\begin{array}{r} 23 \\ \times 2 \\ \hline 46 \end{array}$$

Answer 11.1

Commentary

This was a common error... to get an incorrect answer to the final division.

2 marks

Question 13(a), response 2

- 13 (a) The term-to-term rule for a sequence is

multiply by 2

The 3rd term of the sequence is 46

Work out the 1st term.

Give your answer as a decimal.

$$46 \div 2 = 24$$

$$24 \div 2 = 12$$

12

$$12 \overline{) 12} \quad 12 \overline{) 1000}$$

12
24
36
48
60
74
86
98
100

Answer 0.10

Commentary

Although the first and last divisions go wrong, the method is exactly what should be happening.

2 marks

Question 13(a), response 3

13 (a) The term-to-term rule for a sequence is

multiply by 2

The 3rd term of the sequence is 46

Work out the 1st term.

Give your answer as a decimal.

$$46 \div 2 = 13$$

$$13 \div 2 = 6.5$$

Answer 6.5

Commentary

We can see the method set out here. The first division has gone wrong, but the intention was to do exactly the right processes.

2 marks

Question 13(a), response 4

- 13 (a) The term-to-term rule for a sequence is

multiply by 2

The 3rd term of the sequence is 46

Work out the 1st term.

Give your answer as a decimal.

[3 marks]

$$\boxed{11.5}, \boxed{23}, 46$$

$$\boxed{23} \times 2 = 46 = \frac{23 \times}{4/6} 2 \neq 23 = 23$$

$$= \frac{11 \times}{0/2/0/2} 2 = 22 = 11.5 \text{ will} = 23$$

$$2 \overline{) 23}$$

Answer 11.5**Commentary**

The student has written down the three spaces for the three terms and worked backwards to fill them. This is good because it stops them from going one step too far.

All calculations are correct.

3 marks

Question 13(a), response 5

13 (a) The term-to-term rule for a sequence is

multiply by 2

The 3rd term of the sequence is 46

Work out the 1st term.

Give your answer as a decimal.

$$46 \div 2 = 23$$

Answer 23.00

Commentary

This is a correct first step, but goes no further.

1 mark

Question 13(b)

13 (b) The term-to-term rule for a different sequence is

subtract k

The 1st term is 34

The 4th term is 10

Work out the value of k .

[3 marks]

$k =$ _____

Question 13(b), response 1

13 (b) The term-to-term rule for a different sequence is

subtract k

The 1st term is 34

The 4th term is 10

Work out the value of k .

$$34 - 8 = 26$$

$$26 - 8 = 18$$

$$18 - 8 = 10$$

[3]

$$34 - 10 = 24 \qquad 4 - 1 = 3$$

$$24 \div 3 = 8$$

$$k = 8$$

$$k = 8$$

Commentary

This student has understood that there are 4 “jumps” between the first and fourth terms. They calculate the overall difference correctly and then correctly divide by 3.

3 marks

Question 13(b), response 2

- 13 (b) The term-to-term rule for a different sequence is

subtract k

The 1st term is 34

The 4th term is 10

Work out the value of k .

$$34 - 6 = 28 \quad 28 - 6 = 22 \quad 22 - 6 = 16 \quad 16 - 6 = 10 \quad [3 \text{ marks}]$$

~~27~~ 6,

$$0 - 24 = 24 \text{ difference, in } 10 - 34, \text{ what goes into } 24 \text{ 4 times}$$

24

$$k = 6$$

Commentary

This was a common misunderstanding that there are 4 “jumps” between the first and fourth terms. The student carefully checked their work a different way, but the misunderstanding meant that they couldn’t correct it that way.

1 mark

Question 13(b), response 3

13 (b) The term-to-term rule for a different sequence is

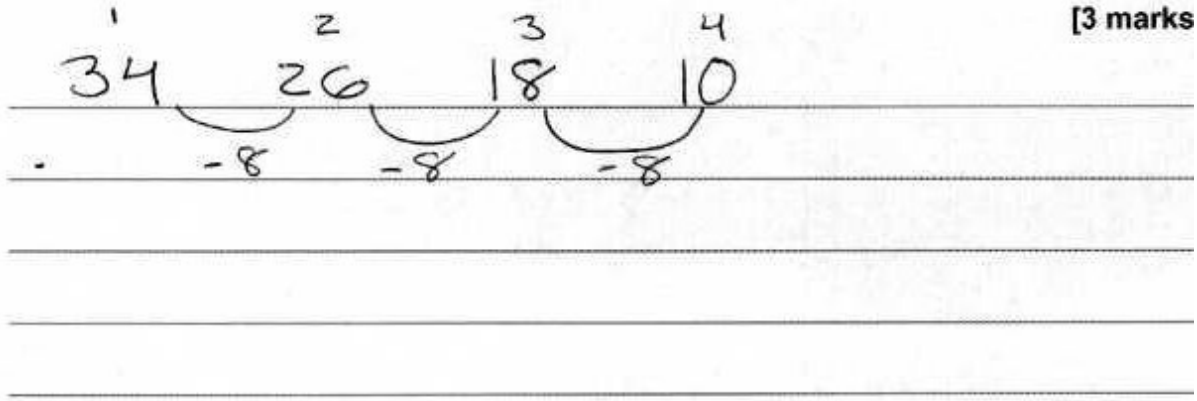
subtract k

The 1st term is 34

The 4th term is 10

Work out the value of k .

[3 marks]



$$k = \underline{\quad -8 \quad}$$

Commentary

The correct number of “jumps” between the first and fourth term have been understood but the rule is “subtract k ”. If we subtract -8 , we would be adding 8.

2 marks

Question 13(b), response 4

13 (b) The term-to-term rule for a different sequence is

subtract k

The 1st term is 34

The 4th term is 10

Work out the value of k .

$$34 - 10 = 24$$

$$k = 24$$

$$k = 24$$

Commentary

This is a correct first step, but the student goes no further.

1 mark

Question 13(b), response 5

13 (b) The term-to-term rule for a different sequence is

subtract k

The 1st term is 34

The 4th term is 10

Work out the value of k .

34 26 18 10

10
18
26
~~34~~

$k = -6$

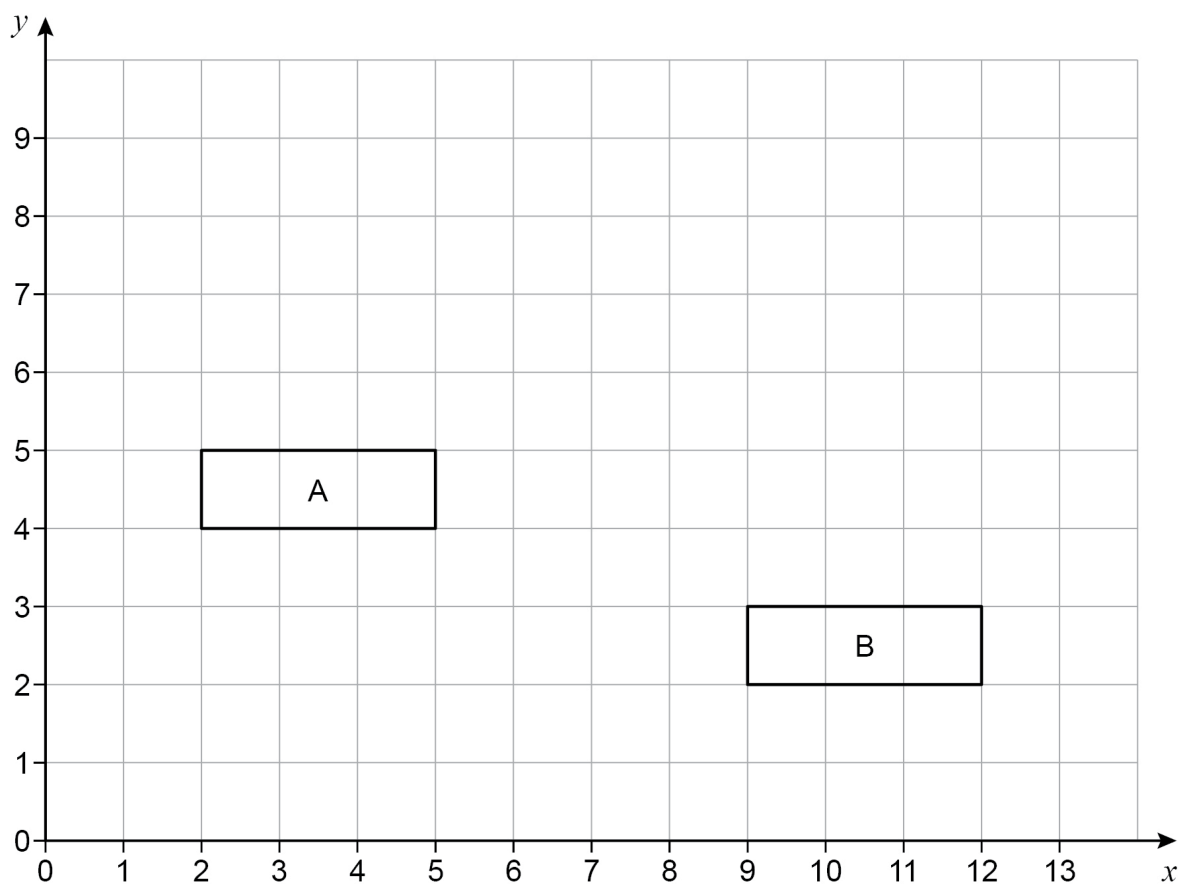
Commentary

The correct terms between the first and fourth term can be seen, but the student has recorded the difference incorrectly on the answer line.

2 marks

Question 14

14



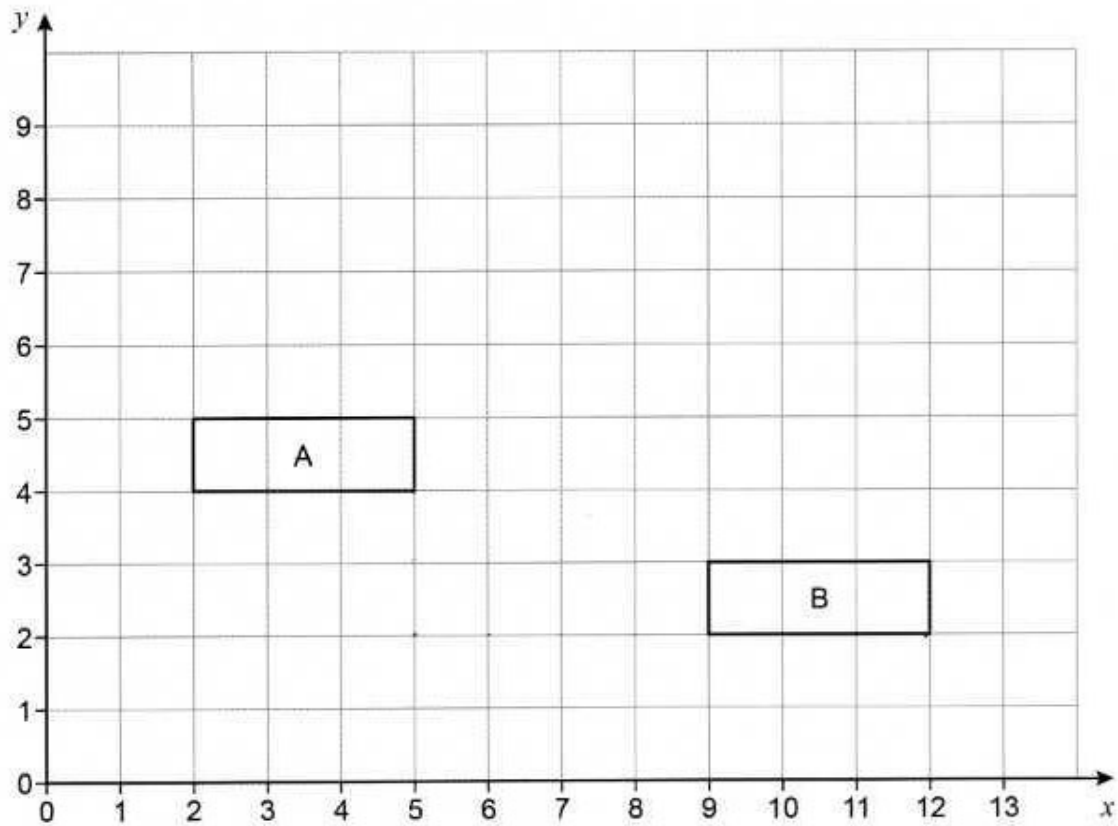
Work out the vector that translates shape A to shape B.

[2 marks]

Answer $\left(\begin{array}{c} \\ \end{array} \right)$

Question 14, response 1

14



Work out the vector that translates shape A to shape B.

[2 marks]

Answer $\begin{pmatrix} -2 \\ 7 \end{pmatrix}$

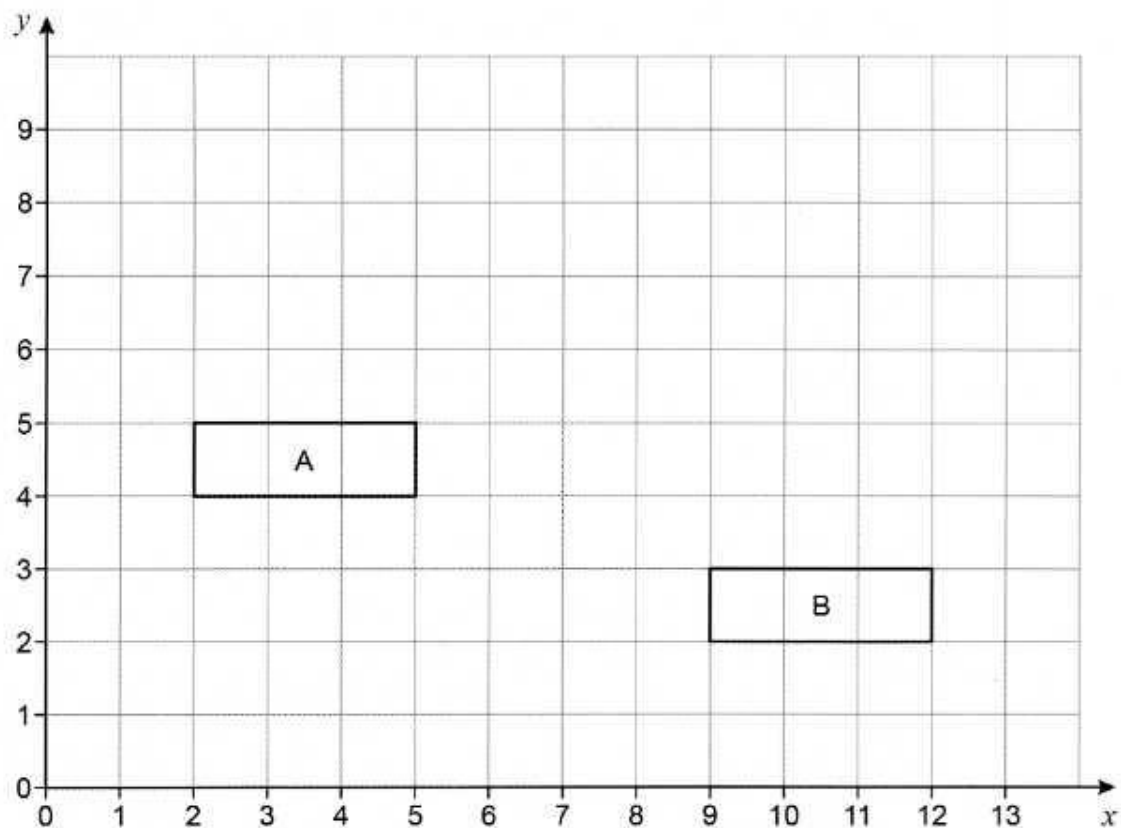
Commentary

This student has counted correctly but put the numbers in the wrong places in the vector.

1 mark

Question 14, response 2

14



Work out the vector that translates shape A to shape B.

[2 marks]

Answer $\begin{pmatrix} -2 \\ -7 \end{pmatrix}$

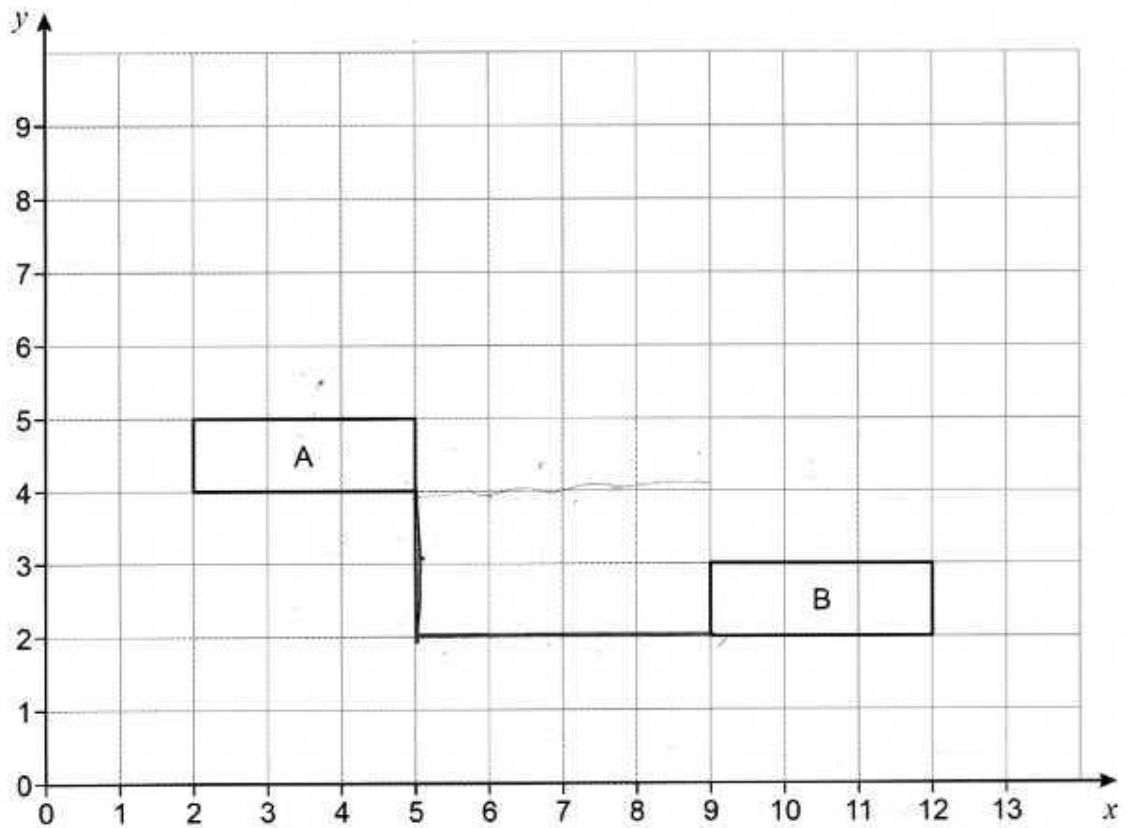
Commentary

The student has counted correctly but as well as putting the numbers in the wrong places in the vector, they also included a negative sign with the 7.

0 marks

Question 14, response 3

14



Work out the vector that translates shape A to shape B.

[2 marks]

Answer $\begin{pmatrix} 4 \\ -2 \end{pmatrix}$

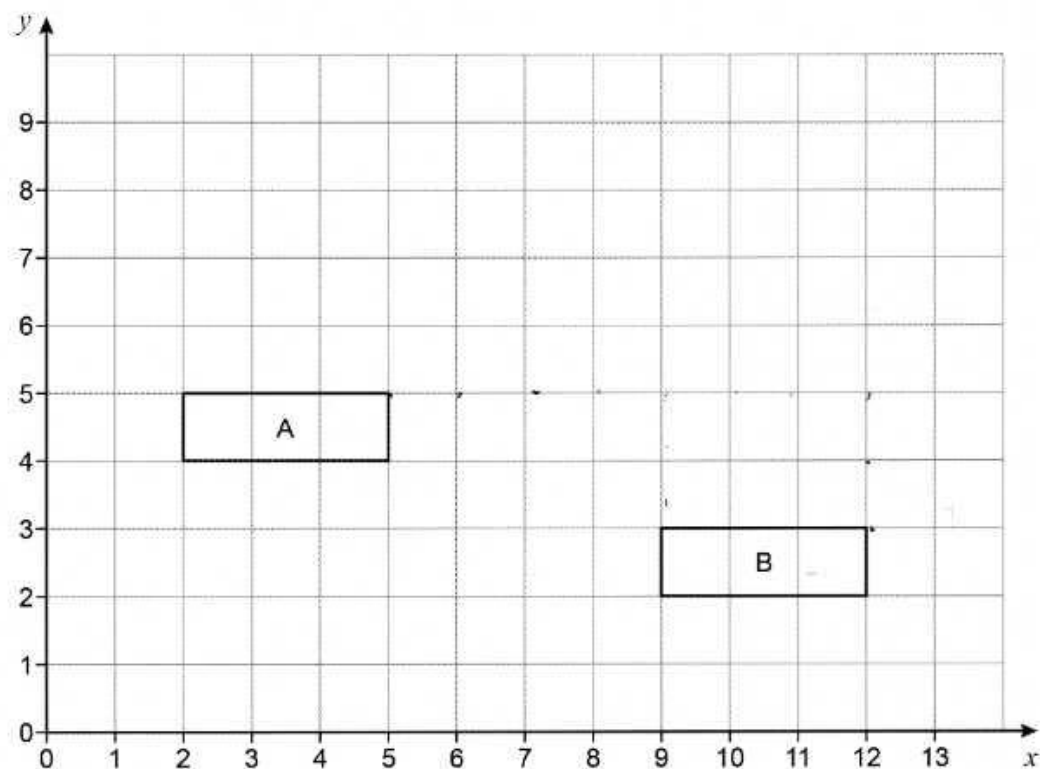
Commentary

The 4 is not correct as that only moves the right hand edge of A to the left hand edge of B. The -2 is correct and will score.

1 mark

Question 14, response 4

14



Work out the vector that translates shape A to shape B.

[2 marks]

Answer $\begin{pmatrix} 7 \\ -2 \end{pmatrix}$

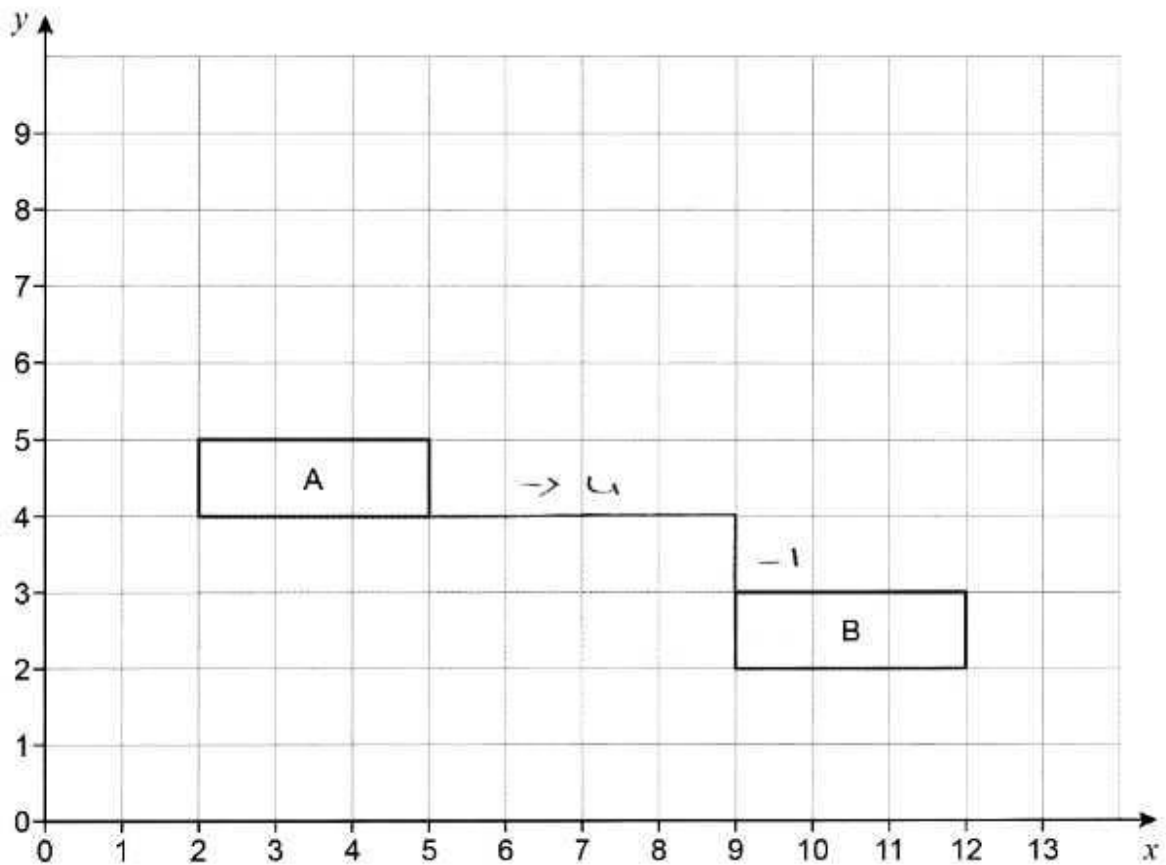
Commentary

You can see that the student has used the top right hand corner of A and used dots to take it to the top right corner of B. This is a good method so that you make sure you're matching corner to corresponding corner.

2 marks

Question 14, response 5

14



Work out the vector that translates shape A to shape B.

[2 marks]

Answer $\begin{pmatrix} 4 \\ -1 \end{pmatrix}$

Commentary

The mistake here is in not taking a corner to the same corner on the other shape. Bottom right of A should go to bottom right of B but this goes to top left of B.

0 marks

Question 15

15

In a bag there are only red discs, blue discs and green discs.

There are 10 red discs.

When one disc is picked at random

$$P(\text{red}) = \frac{1}{8}$$

$$P(\text{blue}) = \frac{2}{5}$$

How many **green** discs are in the bag?

[4 marks]

Answer _____

Question 15, response 1

15

In a bag there are only red discs, blue discs and green discs.

There are 10 red discs.

When one disc is picked at random

$$P(\text{red}) = \frac{1}{8}$$

$$P(\text{blue}) = \frac{2}{5}$$

How many **green** discs are in the bag?

[4 marks]

if 10 is $\frac{1}{8}$ then must be
80 discs together

$80 \div 2 = 40$ $80 \div 5 = 16$
 ~~$40 \div 5 = 8$~~ ~~$\frac{2}{5} = 16$~~ $\frac{2}{5} = 32$

$10 + 32 = 42$
 $100 - 42 = 58$

Answer 58

Commentary

This is almost perfect. If the student had remembered at the end that they start with 80 discs instead of 100, they'd have scored full marks. They've worked out that there are 80 discs in the bag, then worked out how many are red and blue, before subtracting those from the total (wrong total, unfortunately) to get the remainder the must be green.

3 marks

Question 15, response 2

- 15 In a bag there are only red discs, blue discs and green discs.
There are 10 red discs.

When one disc is picked at random

$$P(\text{red}) = \frac{1}{8}$$

$$P(\text{blue}) = \frac{2}{5}$$

How many **green** discs are in the bag?

[4 marks]

$$\frac{1}{8} + \frac{2}{5} = \frac{21}{40}$$

$$\frac{5}{40} + \frac{16}{40} = \frac{21}{40}$$

Answer $\frac{21}{40}$

Commentary

This is a good first step, but without working out the total number of discs, can go no further.

1 mark

Question 15, response 3

15 In a bag there are only red discs, blue discs and green discs.
There are 10 red discs.

When one disc is picked at random

$$P(\text{red}) = \frac{1}{8}$$

$$P(\text{blue}) = \frac{2}{5}$$

How many **green** discs are in the bag?

[4 marks]

Handwritten student work on lined paper:

$$P(\text{Red}) = \frac{10}{80} \quad \frac{42}{80} \quad \frac{16}{80}$$

$$P(\text{blue}) = \frac{32}{80}$$

$$10 + 32 = 42$$

$$16 \times 2 = 32$$

$$80 - 42 = 38$$

$$\text{green} = \frac{28}{80}$$

Final answer: 28

Commentary

The student has worked out that there are 80 discs in total, worked out the correct number of red and blue but made a small slip on working out the number of green.

3 marks

Question 15, response 4

- 15 In a bag there are only red discs, blue discs and green discs.
There are 10 red discs.

When one disc is picked at random

$$P(\text{red}) = \frac{1}{8}$$

$$P(\text{blue}) = \frac{2}{5}$$

How many **green** discs are in the bag?

[4 marks]

$$\begin{aligned} \times 8 \downarrow \frac{1}{80} = 10 & \times 8 & 40\% \text{ of } 80 \\ \frac{2}{5} = 80 & & 10\% = 8 \\ \frac{2}{5} \text{ of } 80 = 32 & & 40\% = 32 \\ \frac{40}{100} & & \end{aligned}$$

$$32 + 10 = 42$$

$$80 - 42 = 38$$

Answer 38 green

Commentary

This is a perfect response. It's neatly laid out and easy to follow.

4 marks

Question 15, response 5

- 15 In a bag there are only red discs, blue discs and green discs.
There are 10 red discs.

When one disc is picked at random

$$P(\text{red}) = \frac{1}{8}$$

$$P(\text{blue}) = \frac{2}{5}$$

How many **green** discs are in the bag?

[4 marks]

$$\frac{1}{8} = \frac{10}{x}$$

$$\frac{2}{5} = \frac{16}{40} = \frac{5}{40} = \frac{21}{40}$$

$$\frac{1}{8} + \frac{2}{5}$$

81 discs in total $\frac{16.2}{5 \times 8100}$

$$\frac{2}{5} \text{ of } 81 = 16.2$$

$$16.2 + 10 = 26.2$$

Answer _____

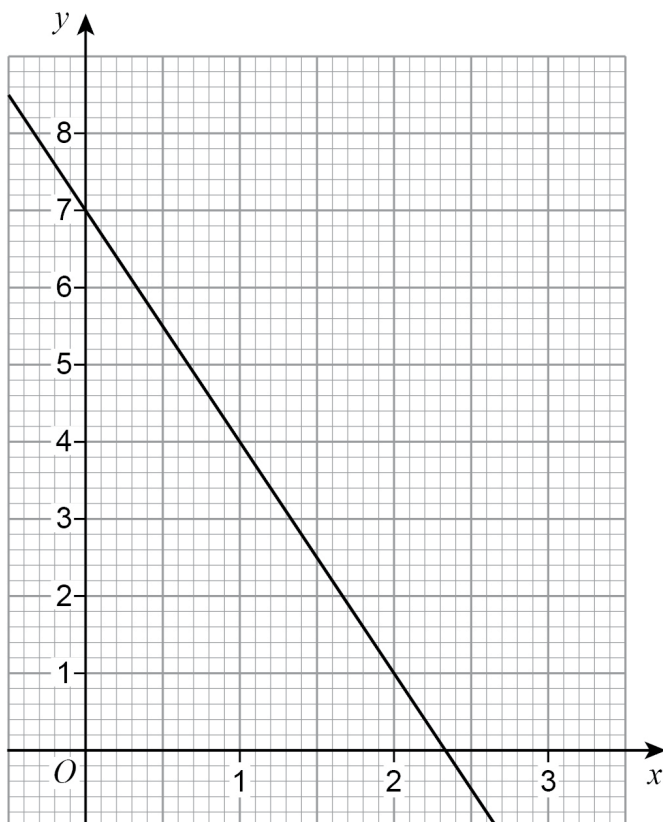
Commentary

Student has the wrong number of discs, but has gone on to correctly work out how many blue discs there would be, and added on the red discs, which are the correct next steps.

2 marks

Question 16

16 Here is the graph of $y = 7 - 3x$



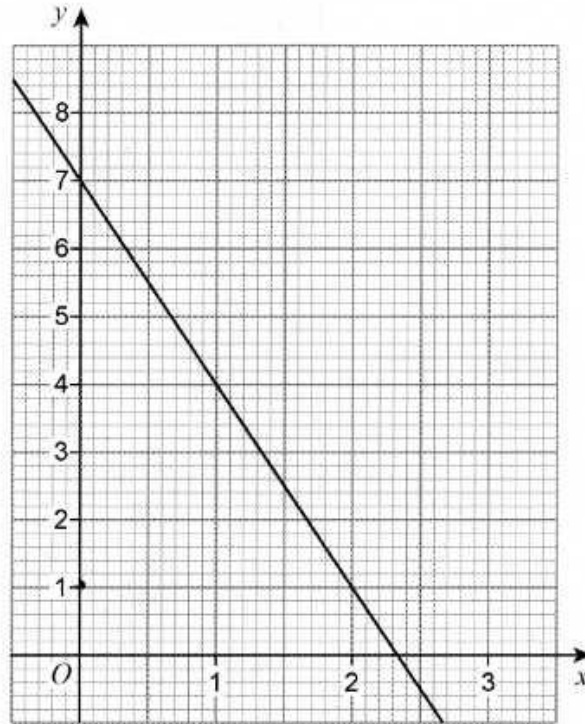
Draw the graph of $y = 2x + 1$ on the grid
and then
work out an approximate solution to $7 - 3x = 2x + 1$

[3 marks]

Answer _____

Question 16, response 1

16 Here is the graph of $y = 7 - 3x$



Draw the graph of $y = 2x + 1$ on the grid
and then

work out an approximate solution to $7 - 3x = 2x + 1$

[3 marks]

x	0	1	2	3
y	1	3	5	7

Answer _____

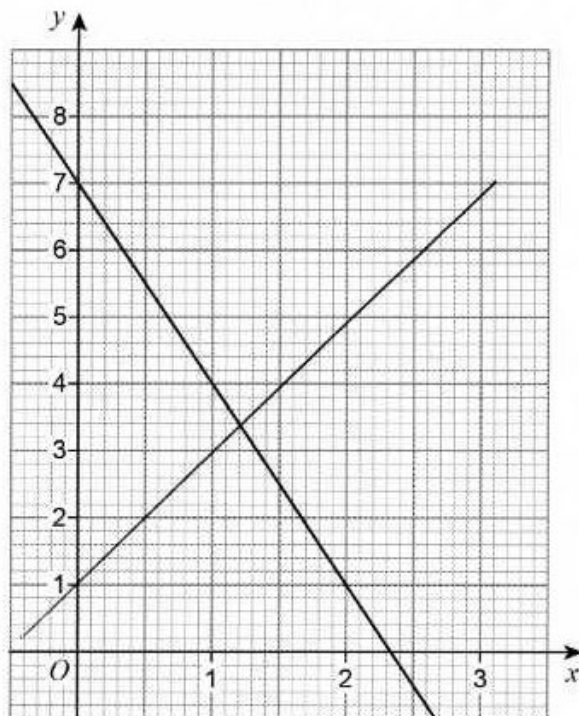
Commentary

Student has correctly worked out a table of values but not plotted the points. This means they have no line crossing the given line, so cannot read off where they cross.

1 mark

Question 16, response 2

16 Here is the graph of $y = 7 - 3x$



Draw the graph of $y = 2x + 1$ on the grid
and then

work out an approximate solution to $7 - 3x = 2x + 1$

$$\begin{aligned} 7 - 3x &= 2x + 1 \\ -2x & \quad -2x \\ 7 - 1 &= 1x \\ 6 &= 1x \end{aligned}$$

[3 marks]

Answer _____

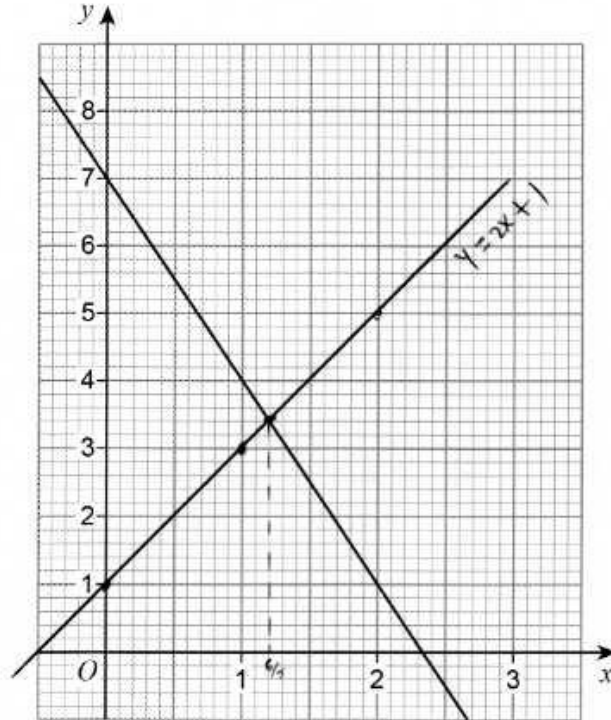
Commentary

There is no table of values here but the line is drawn perfectly. To gain the final mark, they would need to read off the x -coordinate of where the two lines cross.

2 marks

Question 16, response 3

16 Here is the graph of $y = 7 - 3x$



Draw the graph of $y = 2x + 1$ on the grid and then

work out an approximate solution to $7 - 3x = 2x + 1$

$$7 - 1 = 2x + 3x$$

$$6 = \frac{5x}{5}$$

$$x = \frac{6}{5}$$

$$\begin{array}{r|rrrr} x & -1 & 0 & 1 & 2 \\ y & -1 & 1 & 3 & 5 \end{array}$$

[3 marks]

Answer

$\frac{6}{5}$

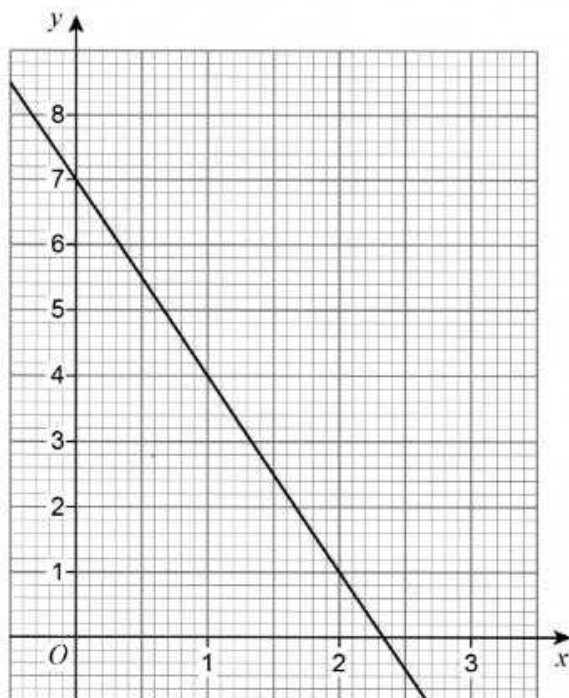
Commentary

The correct line is drawn and the student has dropped a line down from the intersection of the two lines to the x -axis, to read off the value. The algebraic check on the value gives them peace of mind that they have the correct answer.

3 marks

Question 16, response 4

16 Here is the graph of $y = 7 - 3x$



Draw the graph of $y = 2x + 1$ on the grid

and then

work out an approximate solution to $7 - 3x = 2x + 1$

[3 marks]

$$7 - 3x = 2x + 1$$

$$-1 \quad -1$$

$$6 - 3x = 2x$$

$$+3x \quad +3x$$

$$6 = 5x$$

$$\div 5 \quad \div 5 = 1.2$$

Answer

1.2

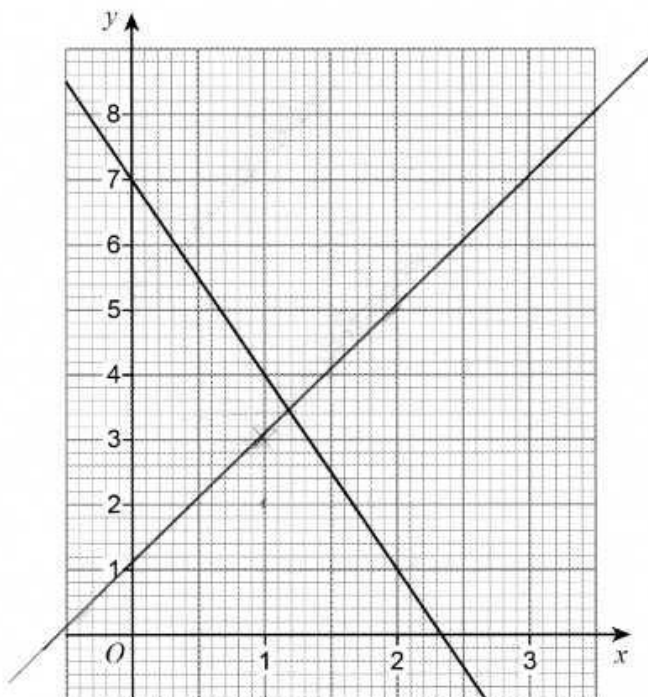
Commentary

This student has not attempted the graph but has tackled the more tricky algebra to get to the solution to the equation.

1 mark

Question 16, response 5

16 Here is the graph of $y = 7 - 3x$



Draw the graph of $y = 2x + 1$ on the grid
and then
work out an approximate solution to $7 - 3x = 2x + 1$

[3 marks]

x	1	2	3
y	2.3	5	7

Answer 1.3, 3.3

Commentary

We have the correct line here but the student has given coordinates as their answer, not just the value for x .

2 marks

Question 18

- 18** Work out $80\,000\,000 \div 200$
Give your answer in standard form.

[2 marks]

Answer _____

Question 18, response 1

18 Work out $80\,000\,000 \div 200$
Give your answer in standard form.

[2 marks]

$8 \div 2 = 4$

400,000 4×10^5

Answer 4×10^5

Commentary

This is a perfect answer. The student has dealt with the 8 and 2 and then included the correct number of zeroes. Once they have the answer to the calculation, they have finished off by putting that number into standard form.

2 marks

Question 18, response 2

- 18 Work out $80\,000\,000 \div 200$
Give your answer in standard form.

[2 marks]

~~80000000~~
400,000

Answer ~~40⁷~~ 40⁴

Commentary

The student has the correct number but has incorrectly converted to standard form.

1 mark

Question 18, response 3

18

Work out $80\,000\,000 \div 200 = 400\,000\,000$
Give your answer in standard form.

[2 marks]

4×10^7

Answer 4×10^7

Commentary

This student does not have the correct value but they have correctly converted their value to standard form.

1 mark

Question 18, response 4

- 18 Work out $80\,000\,000 \div 200$
Give your answer in standard form.

[2 marks]

80,000,000

8×10^7 $200 \overline{) 80,000,000} \begin{matrix} 004 \\ \end{matrix}$

Answer 8×10^7

Commentary

This is a correct first step to one way of answering this question. The first value in the calculation has been correctly converted to standard form.

1 mark

Question 19(a)

19 (a) Work out $\frac{3^{12}}{3^7}$

Give your answer as a whole number.

[2 marks]

Answer _____

Question 19(a), response 1

19 (a) Work out $\frac{3^{12}}{3^7}$

Give your answer as a whole number.

[2 marks]

$$3^{12} \div 3^7 = 3^5$$

300000

Answer 300,000

Commentary

Student has correctly worked out the number in index form but not been able to correctly convert it to a whole number.

1 mark

Question 19(a), response 2

19 (a) Work out $\frac{3^{12}}{3^7}$

Give your answer as a whole number.

[2 marks]

$$\begin{array}{l} 3^{12} \div 3^7 = 3^5 \\ 3^2 = 9 \\ 3^3 = 27 \\ 3^4 = 81 \\ 3^5 = 243 \end{array}$$
$$\begin{array}{r} \times 27 \quad 81 \\ \quad 3 \quad + 3 \\ \hline + 21 \quad + 3 \\ 60 \quad 240 \\ \hline 81 \quad 243 \end{array}$$

Answer 243

Commentary

This is a perfect response. The number has been worked out in index form and then we see clear workings to get it as a whole number.

2 marks

Question 19(a), response 3

19 (a) Work out $\frac{3^{12}}{3^7}$

Give your answer as a whole number.

[2 marks]

$$12 - 7 = 5 \quad 3^5 =$$

$$3 \times 3 = 9 \quad 3 \times 9 = 27 \quad 3 \times 27 = 81 \quad 3 \times 81 = 243$$

$$3 \times 243 =$$

Answer 729

Commentary

This response has the correct number in index form but has gone one step too far when converting to a whole number.

1 mark

Question 19(a), response 4

19 (a) Work out $\frac{3^{12}}{3^7}$

Give your answer as a whole number.

[2 marks]

$\frac{3}{3} = 1$ $12 - 7 = 5$

$1^5 = 5$

Answer 5

Commentary

It was quite a common mistake to deal correctly with the powers but to then divide the 3s.

0 marks

Question 19(b)

19 (b) Simplify $8 \times 2^6 \times 2^4$
Give your answer as a power of 2

[2 marks]

Answer _____

Question 19(b), response 1

19 (b) Simplify $8 \times 2^8 \times 2^4$
Give your answer as a power of 2

[2 marks]

$$2 \times 2^4 = 2^{10}$$

Answer

$$\rightarrow 2^{10}$$

Commentary

This is a great first step, to deal with the powers you can see. To gain the second mark, you'd need to convert 8 to 2^3 and then process the powers you have.

1 mark

Question 19(b), response 2

- 19 (b) Simplify $8 \times 2^6 \times 2^4$
Give your answer as a power of 2

$$8 \times 2^6 \times 2^4 = 8 \times 2^3 \times 2^6 \times 2^4 = 2^{3+6+4} = 2^{13}$$

Answer 2^{13}

Commentary

The student has spotted that 8 becomes 2^3 and gone on to deal with all of the powers at once.

2 marks

Question 19(b), response 3

19 (b) Simplify $8 \times 2^6 \times 2^4$
Give your answer as a power of 2

[2 marks]

$$\begin{array}{l} 2 \times 2 \times 2 \times 2 \times 2 \times 2 \\ 4 \quad 8 \quad 16 \quad 32 \quad 64 \end{array} \quad \begin{array}{l} 8 \times 64 \times 16 \\ 8 \times 2^{10} \end{array}$$

$$8 \times 4 = 32$$

Answer 8×4^{10}

Commentary

Unfortunately, although we see a power of 10, it is on a 4 and not on a 2. The student has mistakenly multiplied the 2s.

0 marks

Question 19(b), response 4

- 19 (b) Simplify $8 \times 2^6 \times 2^4$
Give your answer as a power of 2

[2 marks]

$$8 \times 2^6 \times 2^4 = 8 \times 2^2 \quad 2 \text{ AM} \quad 4$$

~~8x~~

Answer 8×2^2 **Commentary**

The student has made the mistake of adding the powers, instead of subtracting them.

0 marks

Question 20

20

In a group of 98 students

25 study both Art and French

10 study Art but do not study French

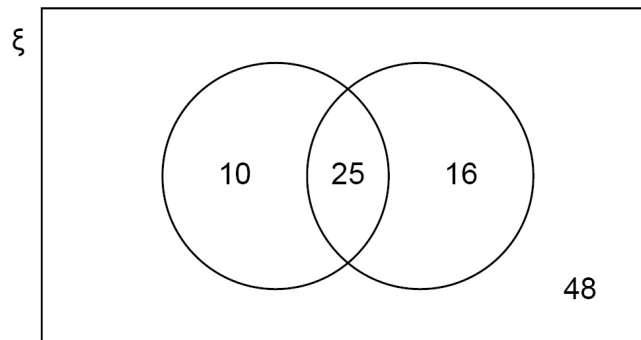
41 study French.

Joel draws this Venn diagram to represent the information.

ξ = the group of 98 students

A = the students who study Art

F = the students who study French



Make **two** criticisms of his diagram.

[2 marks]

Criticism 1 _____

Criticism 2 _____

Question 20, response 1

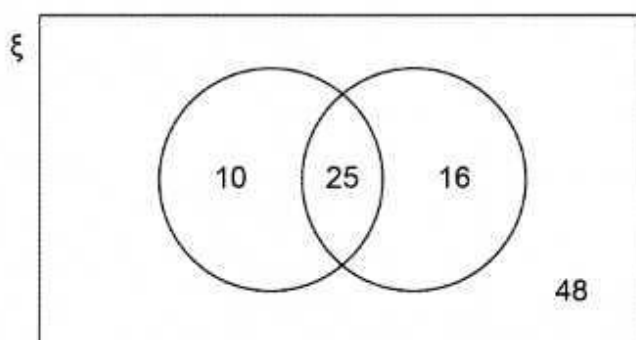
- 20** In a group of 98 students
 25 study both Art and French
 10 study Art but do not study French
 41 study French.

Joel draws this Venn diagram to represent the information.

ξ = the group of 98 students

A = the students who study Art

F = the students who study French



Make **two** criticisms of his diagram.

- Criticism 1 ~~There is no label to say~~ **There is no label to say** which side of the Venn diagram is Art or French in Venn diagram [2 marks]
- Criticism 2 all the numbers add up to 99 not 98

Commentary

Student has correctly identified both of the errors with the Venn diagram.

2 marks

Question 20, response 2

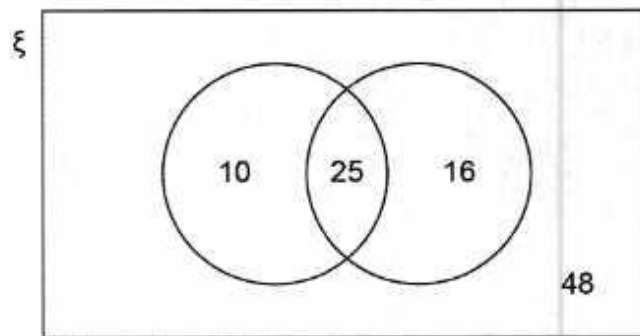
- 20 In a group of 98 students
25 study both Art and French
10 study Art but do not study French
41 study French.

Joel draws this Venn diagram to represent the information.

ξ = the group of 98 students

A = the students who study Art

F = the students who study French



Make **two** criticisms of his diagram.

[2 marks]

- Criticism 1 The group of students who is all together is 98 not 48
- Criticism 2 41 study French not 16

Commentary

It was a common mistake to forget that the 25 in the intersection also studied French, so the Venn diagram does actually show that 41 students study French.

0 marks

Question 20, response 3

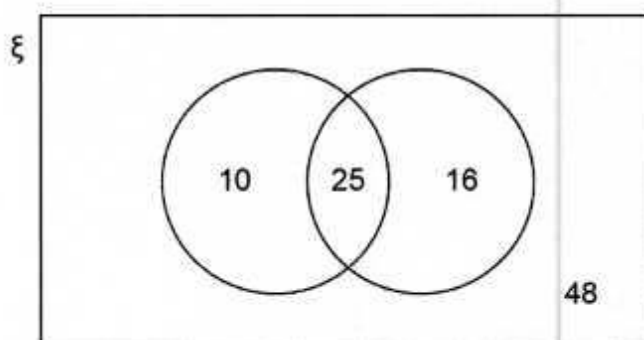
- 20 In a group of 98 students
 25 study both Art and French
 10 study Art but do not study French
 41 study French.

Joel draws this Venn diagram to represent the information.

ξ = the group of 98 students

A = the students who study Art

F = the students who study French



Make **two** criticisms of his diagram.

[2 marks]

Criticism 1 They havent labelled it so I dont know
what group studys art or french

Criticism 2 The numbers are wrong.

Commentary

The comment about labels is worth a mark, but the other comment is incorrect. There is only one incorrect value on the Venn diagram.

1 mark

Question 20, response 4

20

In a group of 98 students

25 study both Art and French ✓

10 study Art but do not study French ✓

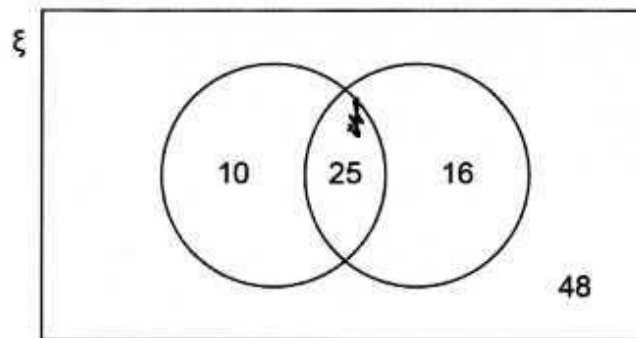
41 study French. ✗ ✓

Joel draws this Venn diagram to represent the information.

ξ = the group of 98 students

A = the students who study Art

F = the students who study French



Make **two** criticisms of his diagram.

[2 marks]

Criticism 1 he hasn't labeled which circle is french ~~and~~ and which one is art

Criticism 2 ~~he hasn't labeled which circle is art~~
has put that 48 pupils don't do either when it should be 47 (added an extra pupil)

Commentary

Altering the 48 to 47 would take care of the extra student that has crept into the Venn diagram, without affecting any of the given values.

2 marks

Question 20, response 5

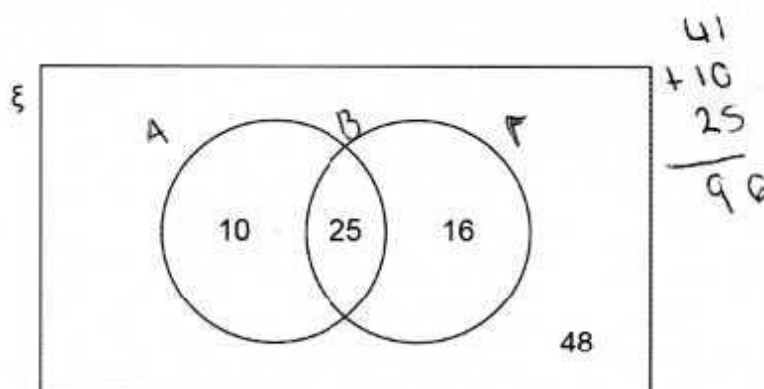
- 20 In a group of 98 students
- 25 study both Art and French
 - 10 study Art but do not study French
 - 41 study French.

Joel draws this Venn diagram to represent the information.

ξ = the group of 98 students

A = the students who study Art

F = the students who study French



Make **two** criticisms of his diagram.

[2 marks]

Criticism 1 There are not 16 students that just study french.

Criticism 2 all students within the diagram don't add up to match 98 students,

Commentary

Whilst this student tells us that the numbers don't add up to the 98 that they should add up to, they get a total of 96, which is not correct.

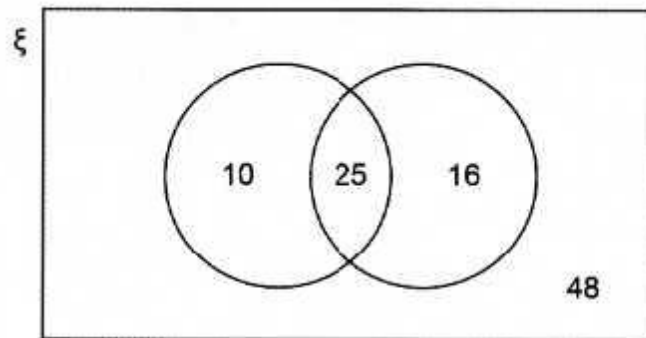
0 marks

Question 20, response 6

- 20 In a group of 98 students
25 study both Art and French
10 study Art but do not study French
41 study French.

Joel draws this Venn diagram to represent the information.

- ξ = the group of 98 students
A = the students who study Art
F = the students who study French



Make **two** criticisms of his diagram.

[2 marks]

Criticism 1 he has not labelled the
diagram.

Criticism 2 he needs to put the letters
from his key

Commentary

This response only refers to the one issue. It refers to it in two slightly different ways, but they have only identified one issue.

1 mark

Turn over for next question

Question 22

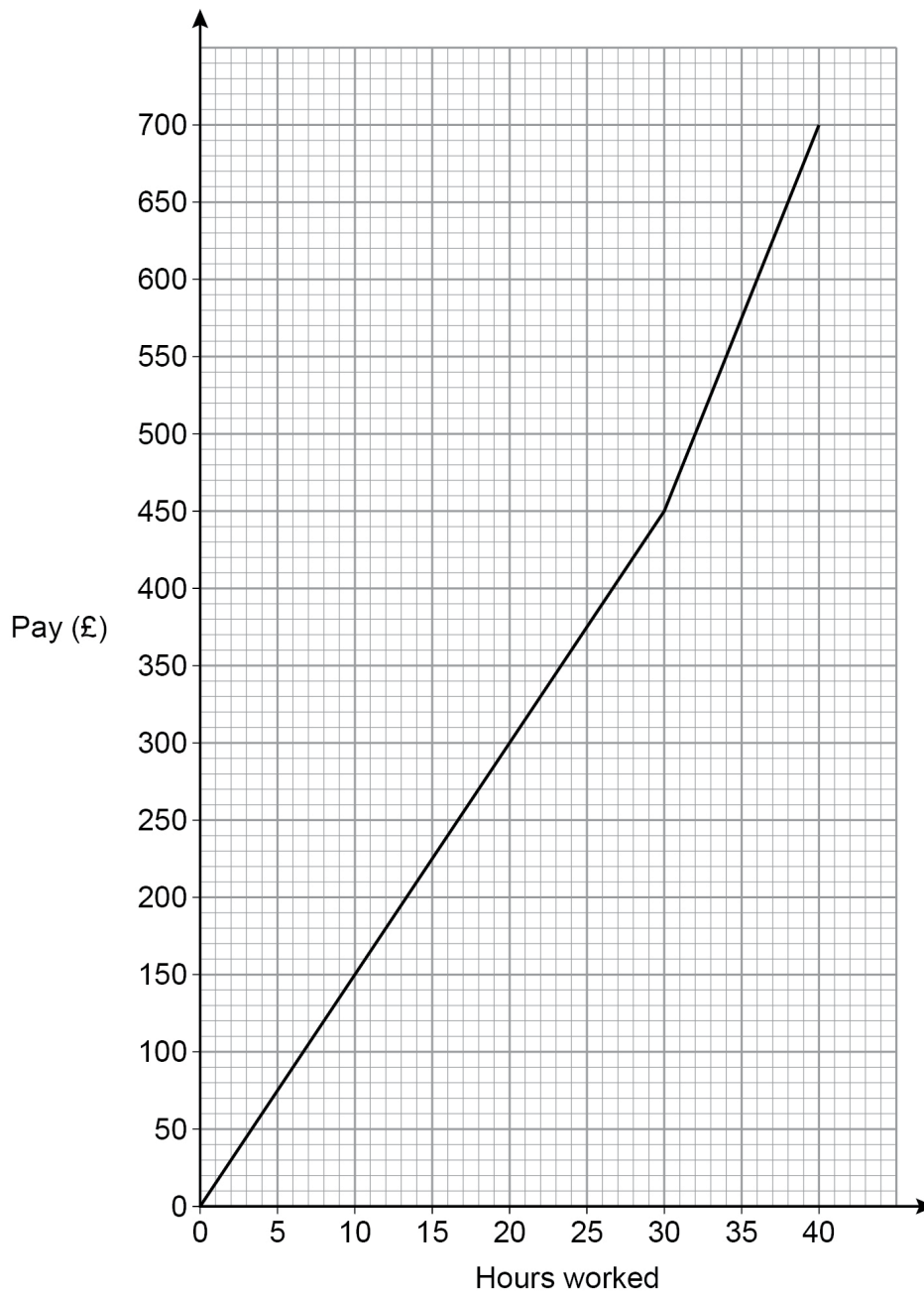
22

In a week, Samir is paid

a basic hourly rate for the first 30 hours worked

an overtime hourly rate for any extra hours worked.

The graph shows his pay for working up to 40 hours in a week.



Work out the ratio basic hourly rate : overtime hourly rate

Give your answer in its simplest form.

[3 marks]

Answer _____ : _____

Question 22, response 1

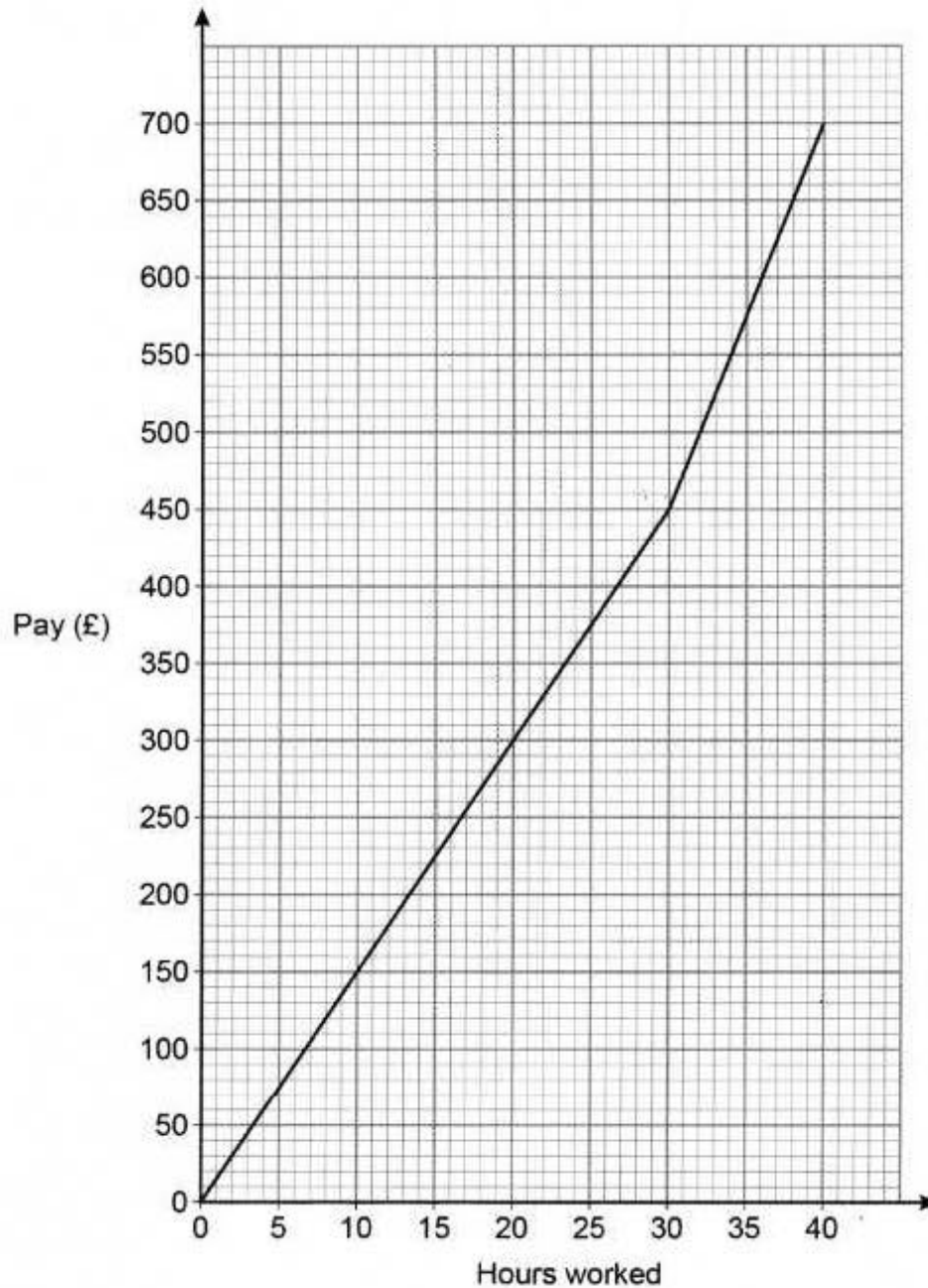
22

In a week, Samir is paid

a basic hourly rate for the first 30 hours worked

an overtime hourly rate for any extra hours worked.

The graph shows his pay for working up to 40 hours in a week.



Work out the ratio basic hourly rate : overtime hourly rate

Give your answer in its simplest form.

[3 marks]

$$30 : 46$$

$$450 : 700 =$$

$$45 : 70 =$$

$$9 : 14$$

Answer 9 : 14

Commentary

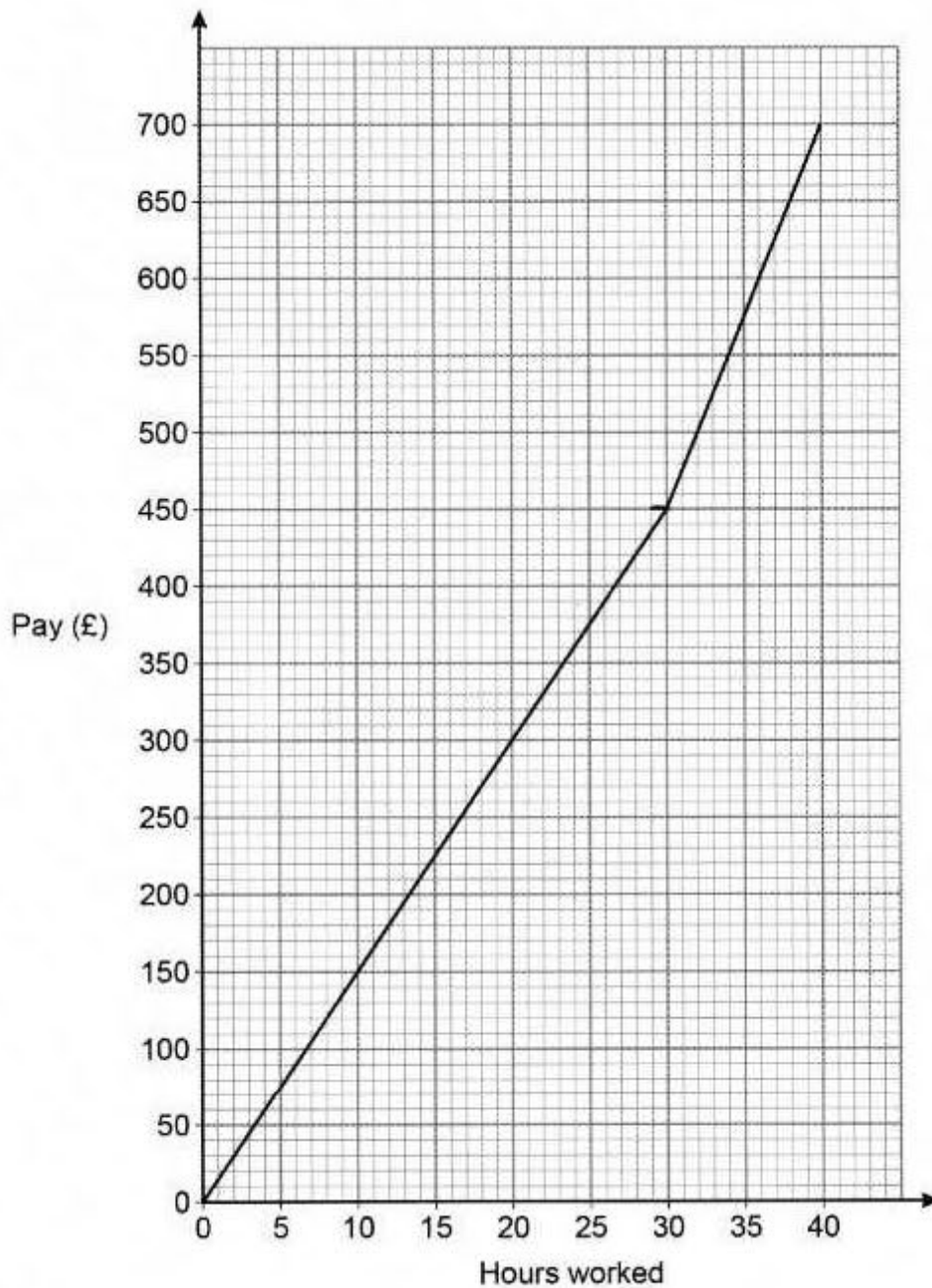
Student has only worked with two figures taken from the pay scale but has correctly simplified them.

1 mark

Question 22, response 2

- 22 In a week, Samir is paid
a basic hourly rate for the first 30 hours worked
an overtime hourly rate for any extra hours worked.

The graph shows his pay for working up to 40 hours in a week.



Work out the ratio basic hourly rate : overtime hourly rate

Give your answer in its simplest form.

[3 marks]

$$\begin{array}{l}
 450 = 30 \text{ hrs} \\
 10 \text{ hr} = \text{£} 250
 \end{array}
 \qquad
 \begin{array}{l}
 \frac{450}{30} \text{ £} 15.00 \text{ per hour} \\
 \text{basic rate}
 \end{array}$$

$$\frac{250}{10} = \text{£} 25.00 \text{ per hour}$$

Answer _____ : _____

Commentary

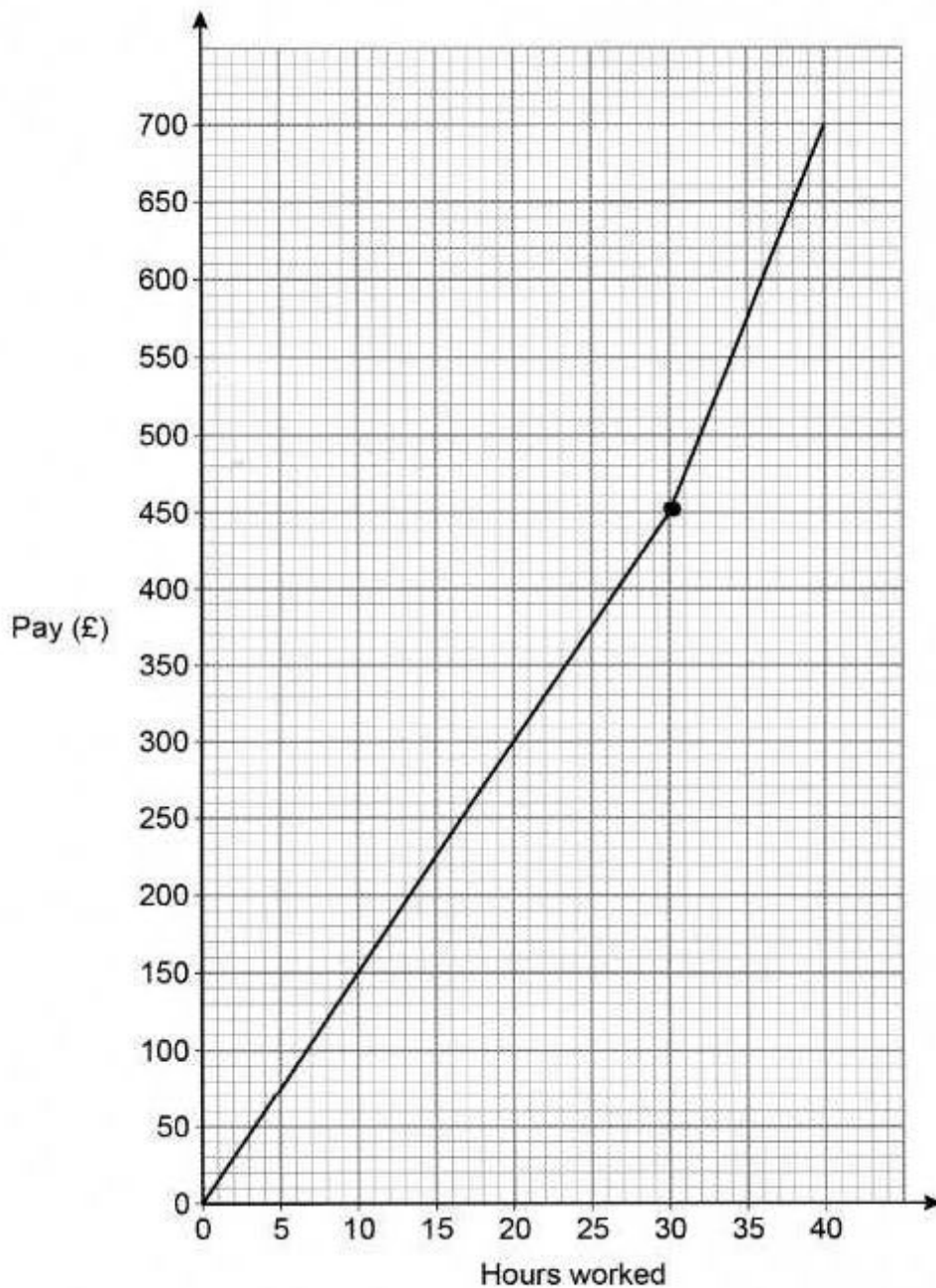
Student has correctly worked out the rate of pay for basic pay and for overtime pay but not given as a simplified ratio at the end.

2 marks

Question 22, response 3

- 22 In a week, Samir is paid
a basic hourly rate for the first 30 hours worked
an overtime hourly rate for any extra hours worked.

The graph shows his pay for working up to 40 hours in a week.



Work out the ratio basic hourly rate : overtime hourly rate

Give your answer in its simplest form.

[3 marks]

$$5 \text{ hours} = 75 \quad 75 \div 5 \quad 1 \text{ hour basic} = 15 \pounds$$

$$5 \overline{) 75} \begin{array}{r} 15 \\ \underline{50} \\ 25 \end{array}$$

$$5 \text{ hours} = 125 \quad 125 \div 5 \quad 1 \text{ hour overtime} = \pounds 25$$

$$5 \overline{) 125} \begin{array}{r} 25 \\ \underline{100} \\ 25 \end{array} \quad 15:25 = 3:5$$

Answer 3 : 5

Commentary

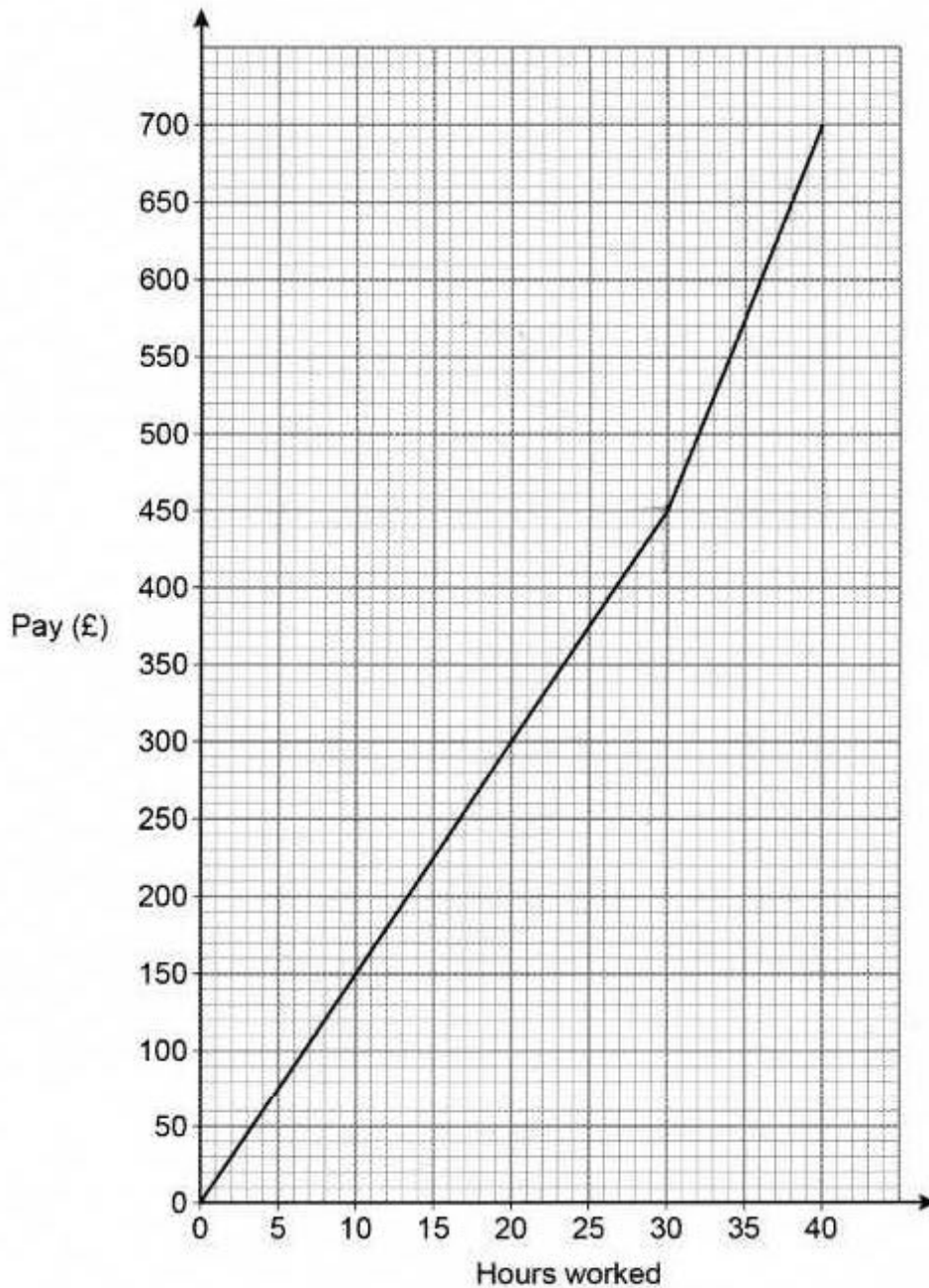
This is a perfect response. The rates of pay are calculated and the simplified ratio worked out.

3 marks

Question 22, response 4

- 22 In a week, Samir is paid
a basic hourly rate for the first 30 hours worked
an overtime hourly rate for any extra hours worked.

The graph shows his pay for working up to 40 hours in a week.



Work out the ratio basic hourly rate : overtime hourly rate

Give your answer in its simplest form.

[3 marks]

$$\frac{450}{700} = \frac{450 \div 50}{700 \div 50} = \frac{9}{14}$$

Answer 450 : 700

Commentary

All we have here are two readings from the pay scale. They have not been simplified so cannot pick up the final mark.

0 marks

Question 22, response 5

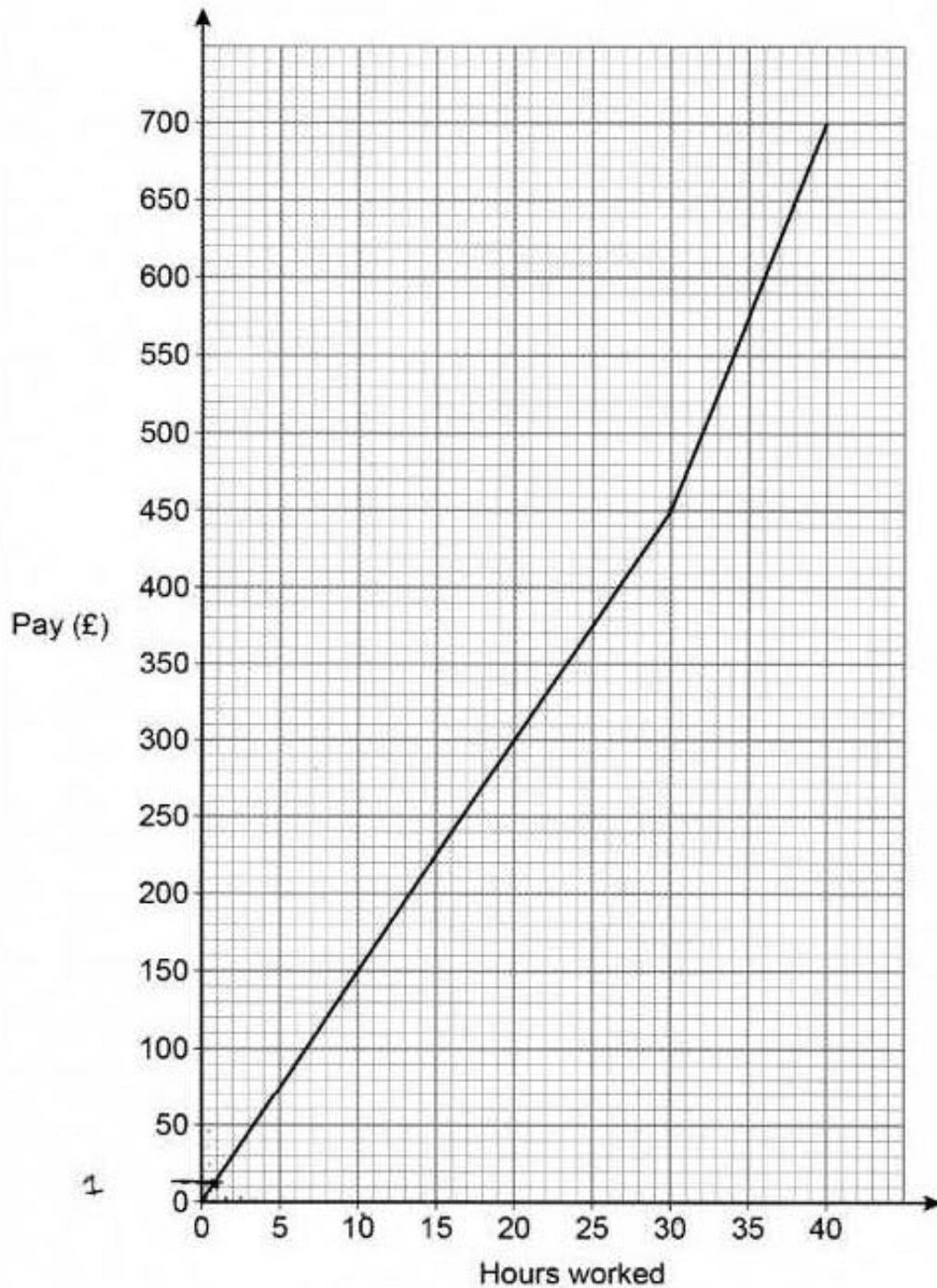
22

In a week, Samir is paid

a basic hourly rate for the first 30 hours worked

an overtime hourly rate for any extra hours worked.

The graph shows his pay for working up to 40 hours in a week.



$\text{£}10 = 1 \text{ hour}$

Work out the ratio basic hourly rate : overtime hourly rate

Give your answer in its simplest form.

[3 marks]

$$30 \text{ hours} = \pounds 450$$

$$\text{overtime (10 hours)} = \pounds 150$$

$$\begin{array}{r} 01 \\ 30 \overline{) 450} \\ \underline{30} \\ 150 \\ \underline{150} \\ 0 \end{array}$$

$$\begin{array}{r} 15 \\ 30 \overline{) 450} \\ \underline{30} \\ 150 \\ \underline{150} \\ 0 \end{array} \quad 150$$

Answer ~~15~~: 3

Commentary

We can see the 30 hours for £450 and then the 450 is divided by the 30 to correctly work out a rate of pay of £15 per hour.

1 mark

Question 23(a)

23 (a) In each box, write a fraction **less** than 1 to make a correct calculation.

[1 mark]

$$\begin{array}{|c|} \hline \\ \hline \\ \hline \end{array} \times \begin{array}{|c|} \hline \\ \hline \\ \hline \end{array} = \frac{3}{10}$$

Question 23(a), response 1

23 (a) In each box, write a fraction **less** than 1 to make a correct calculation.

[1 mark]

$$\frac{3}{5} \times \frac{1}{2} = \frac{3}{10}$$

Commentary

Perfect answer.

1 mark

Question 23(a), response 2

23 (a) In each box, write a fraction **less** than 1 to make a correct calculation.

[1 mark]

$$\frac{1}{5} \times \frac{3}{2} = \frac{3}{10}$$

Commentary

Although these fractions would indeed give $\frac{3}{10}$ as the answer when multiplied, $\frac{3}{2}$ is not less than 1.

0 marks

Question 23(a), response 3

23 (a) In each box, write a fraction **less** than 1 to make a correct calculation.

[1 mark]

$$\frac{1.5}{5} \times \frac{2}{2} = \frac{3}{10}$$

Commentary

In a fractions question we don't want to see decimals as part of a fraction.

0 marks

Question 23(a), response 4

23 (a) In each box, write a fraction **less** than 1 to make a correct calculation.

[1 mark]

$$\frac{\overset{-1}{\cancel{0.6}}}{-5} \times \frac{\overset{-3}{\cancel{0.5}}}{-2} = \frac{3}{10}$$

$\times \begin{array}{r} 0.6 \\ 0.5 \\ \hline 3.0 \end{array}$

Commentary

This student has tried to use negative numbers to make sure their fractions are each less than 1. Using a negative sign on the top and bottom of a fraction will make the fraction positive overall.

0 marks

Question 23(b)

23 (b) In each box, write a decimal **less** than 1 to make a correct calculation.

[1 mark]

$$\boxed{} \times \boxed{} = 0.06$$

Question 23(b), response 1

23 (b) In each box, write a decimal **less** than 1 to make a correct calculation.

[1 mark]

$$\boxed{0.03} \times \boxed{0.02} = 0.06$$

Commentary

The student has identified that 2 and 3 would multiply to give the 6 that we need, but they have not understood that the place value means their answer would actually be 0.0006.

0 marks

Question 23(b), response 2

23 (b) In each box, write a decimal **less** than 1 to make a correct calculation.

[1 mark]

$$\boxed{0.06} \times \boxed{1} = 0.06$$

Commentary

This was a common answer, but the 1 is not less than 1, so can't score.

0 marks

Question 23(b), response 3

23 (b) In each box, write a decimal **less** than 1 to make a correct calculation.

[1 mark]

$$\boxed{0.1} \times \boxed{0.6} = 0.06$$

Commentary

Perfect answer. Each fraction is less than 1 and they multiply together to give 0.06.

1 mark

Question 23(b), response 4

23 (b) In each box, write a decimal **less** than 1 to make a correct calculation.

$$\boxed{0.01} \times \boxed{6} = 0.06$$

Commentary

6 is not less than 1.

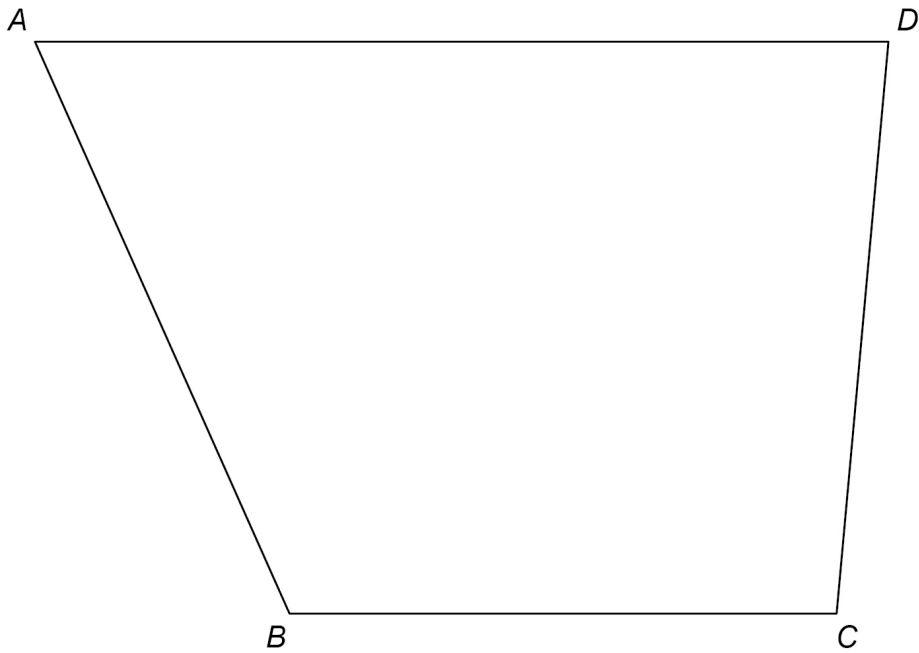
0 marks

Question 24

24

Use a ruler and compasses in this question.

$ABCD$ represents a garden.



A tree is to be planted in the garden.

The tree will be in the region that is closer to AB than to BC .

Label the region, R , where the tree could be planted.

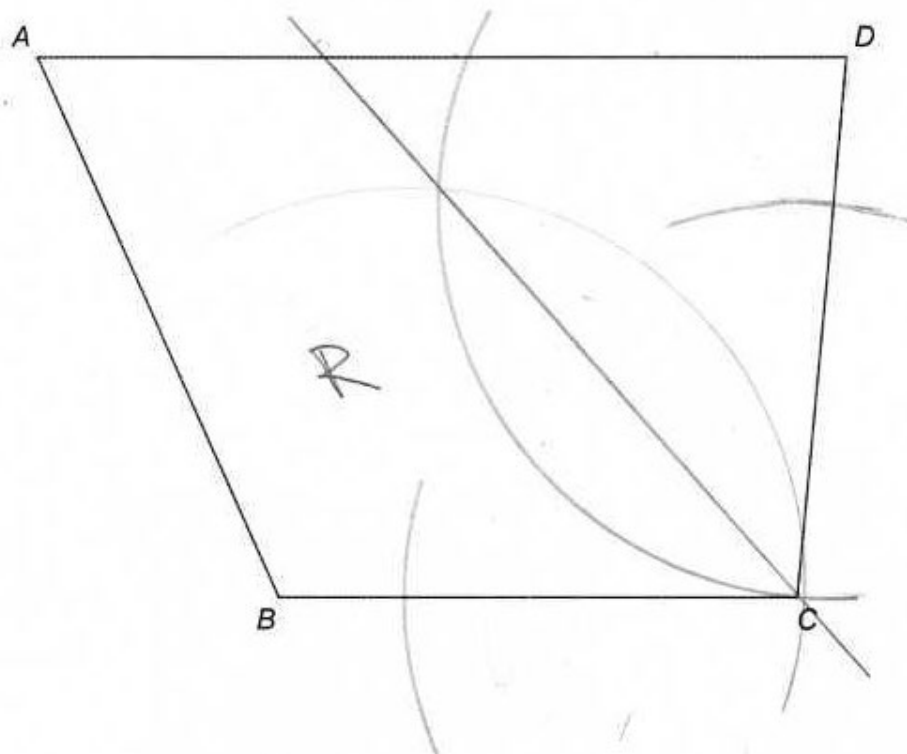
Show all your construction lines.

[3 marks]

Question 24, response 1

24 Use a ruler and compasses in this question.

$ABCD$ represents a garden.



A tree is to be planted in the garden.

The tree will be in the region that is closer to AB than to BC .

Label the region, R , where the tree could be planted.

Show all your construction lines.

[3 marks]

Commentary

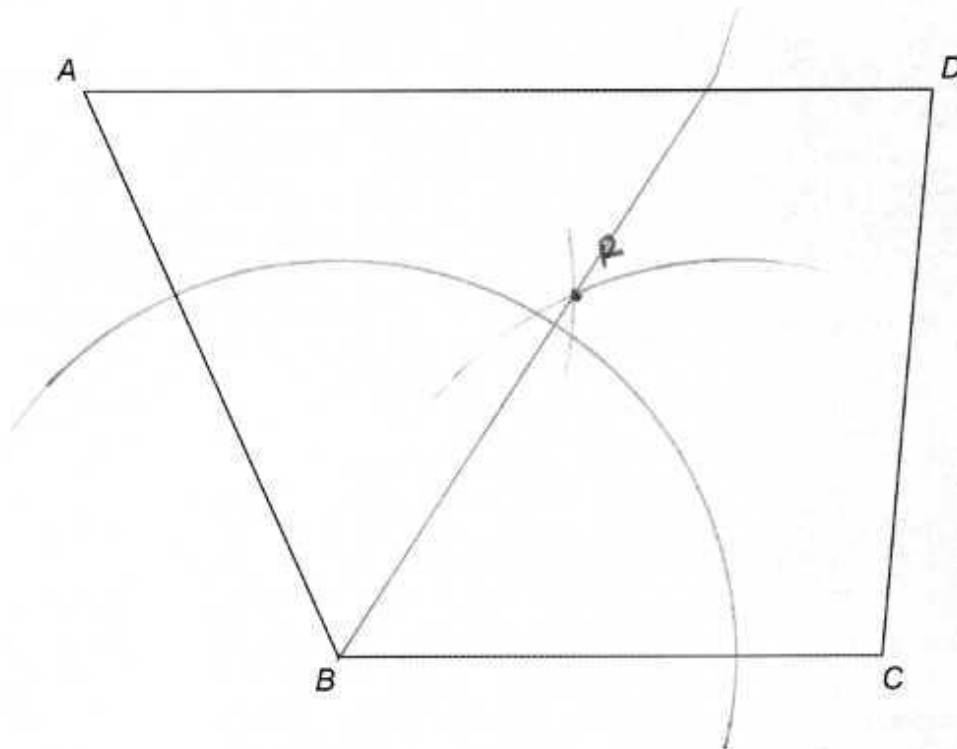
This is the correct way to construct an angle bisector. Unfortunately, it was done on the wrong corner.

1 mark

Question 24, response 2

- Use a ruler and compasses in this question.

$ABCD$ represents a garden.



A tree is to be planted in the garden.

The tree will be in the region that is closer to AB than to BC .

Label the region, R , where the tree could be planted.

Show all your construction lines.

[3 marks]

Commentary

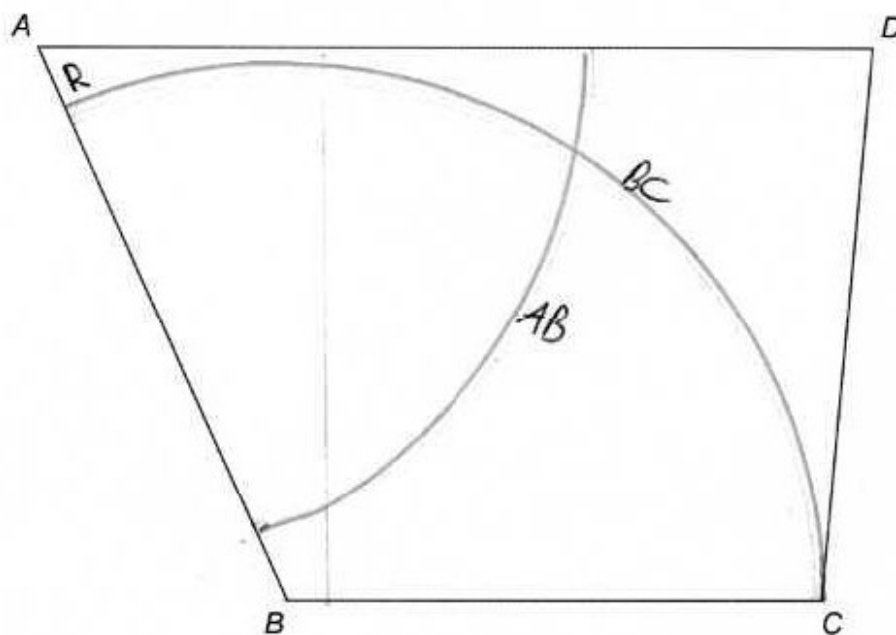
The correct angle has been bisected but the region is not correctly identified.

2 marks

Question 24, response 3

24 Use a ruler and compasses in this question.

$ABCD$ represents a garden.



A tree is to be planted in the garden.

The tree will be in the region that is closer to AB than to BC .

Label the region, R , where the tree could be planted.

Show all your construction lines.

[3 ma

Commentary

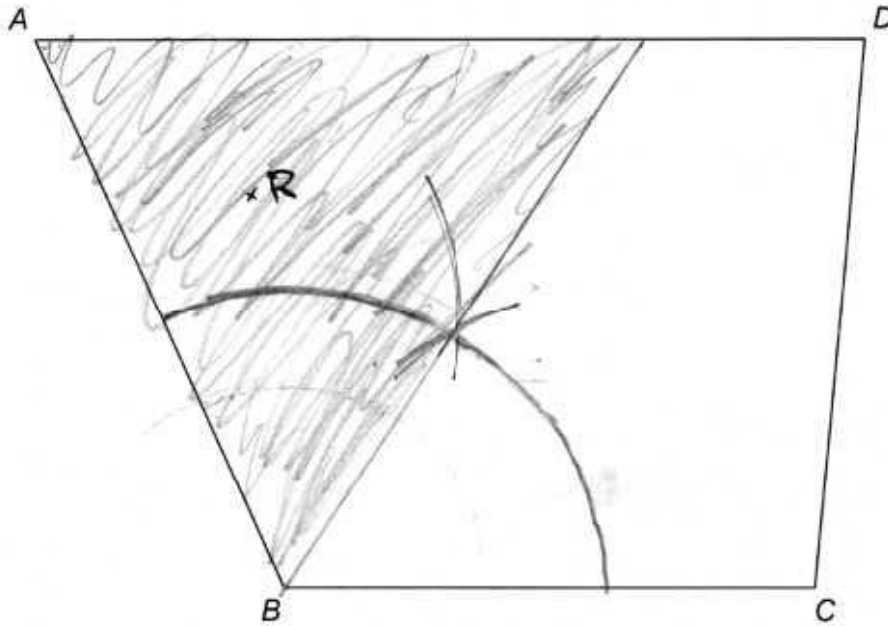
This is the correct first step to constructing an angle bisector, to draw an arc out to either side of the corner, touching each edge.

1 mark

Question 24, response 4

24 Use a ruler and compasses in this question.

$ABCD$ represents a garden.



A tree is to be planted in the garden.

The tree will be in the region that is closer to AB than to BC .

Label the region, R , where the tree could be planted.

Show all your construction lines.

[3 marks]

Commentary

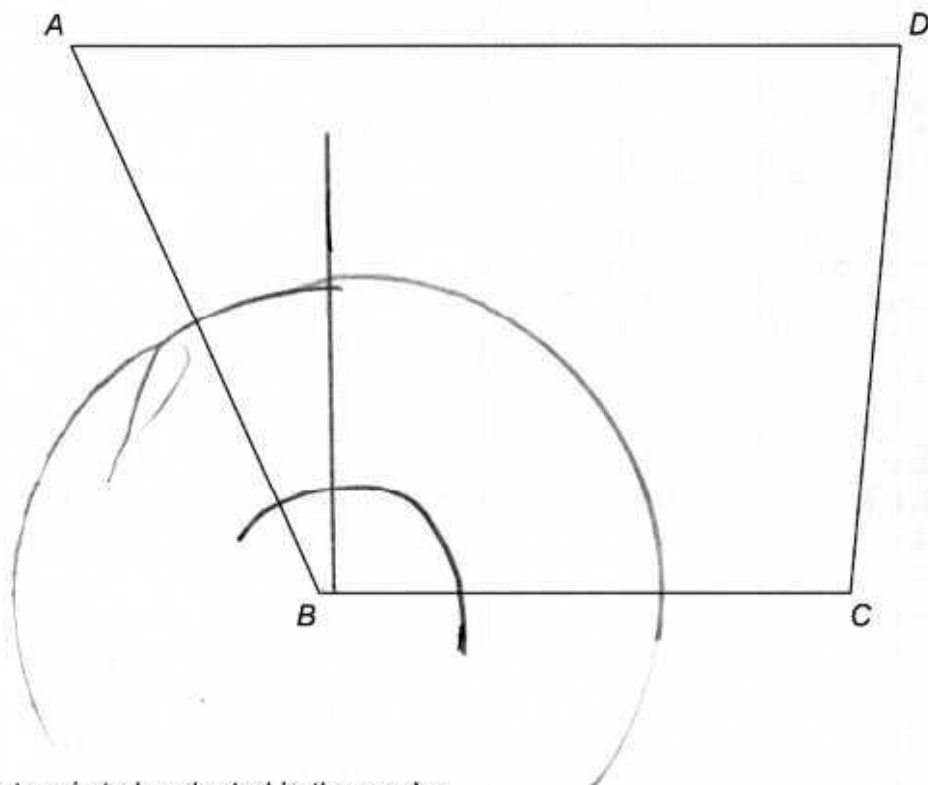
Perfect response. The arcs are clear to see and the bisecting line meets the edge AD . The correct region is then clearly identified.

3 marks

Question 24, response 5

24 Use a ruler and compasses in this question.

$ABCD$ represents a garden.



A tree is to be planted in the garden.

The tree will be in the region that is closer to AB than to BC .

Label the region, R , where the tree could be planted.

Show all your construction lines.

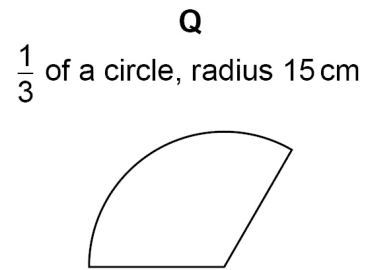
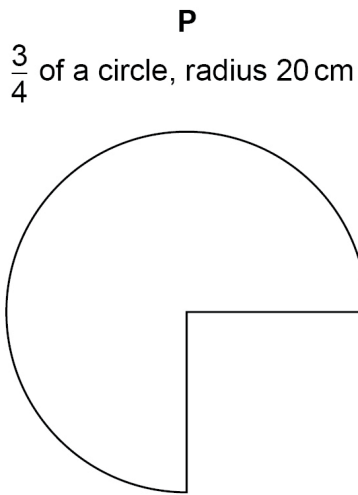
Commentary

This is a different method to create an angle bisector. The two arcs, centred on B are drawn. To score further, you would need to draw two lines from the AB intersection of one arc to the BC intersection of the other arc, draw the bisector through the point that's created and identify the correct region.

1 mark

Question 25

25 Here are two shapes, P and Q.



Not drawn accurately

How many times bigger is the area of P than the area of Q?
You **must** show your working.

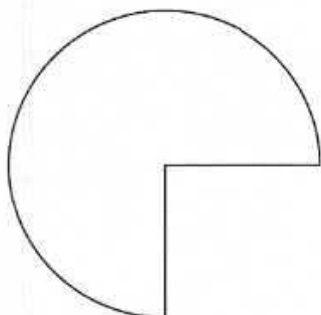
[4 marks]

Answer _____

Question 25, response 1

25 Here are two shapes, P and Q.

P
 $\frac{3}{4}$ of a circle, radius 20 cm



Q
 $\frac{1}{3}$ of a circle, radius 15 cm



Not drawn accurately

How many times bigger is the area of P than the area of Q?

You **must** show your working.

[4 marks]

$$20^2 = 400$$

$$400 \times \pi = 400\pi$$

$$15^2 = 225$$

$$225 \times \pi = 225\pi$$

Area = 1.75 x ~~15~~ Bigger than Q

$$\begin{array}{r} 20 \\ \times 20 \\ \hline 00 \\ 400 \\ \hline \end{array}$$

$$\begin{array}{r} 15 \\ \times 15 \\ \hline 75 \\ 150 \\ \hline 225 \end{array}$$

Answer 1.75

Commentary

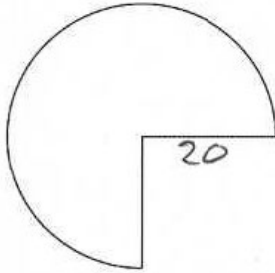
The area of each full circle has been found but the fractions have not been dealt with, so nothing further can be scored.

1 mark

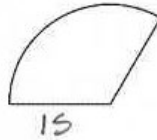
Question 25, response 2

25 Here are two shapes, P and Q.

P
 $\frac{3}{4}$ of a circle, radius 20 cm



Q
 $\frac{1}{3}$ of a circle, radius 15 cm



Not drawn accurately

How many times bigger is the area of P than the area of Q?

You **must** show your working.

[4 marks]

$$\begin{aligned} & \cancel{\pi} \times r^2 \\ & \pi \times 20^2 \\ & = 20 \times 20 = 400 \cdot \pi = 4 = 100 \pi \div 25 \end{aligned}$$

$$\begin{aligned} & \cancel{\pi} \times r^2 \\ & \pi \times 15^2 = 225 \pi \div 3 = 75 \pi \quad \begin{array}{r} 075 \\ 3 \overline{)225} \end{array} \end{aligned}$$

Answer 15 π

$$\begin{array}{r} 15 \\ - 65 \\ \hline 75 \\ 150 \\ \hline 225 \end{array}$$

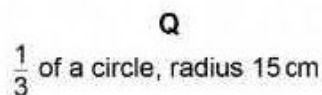
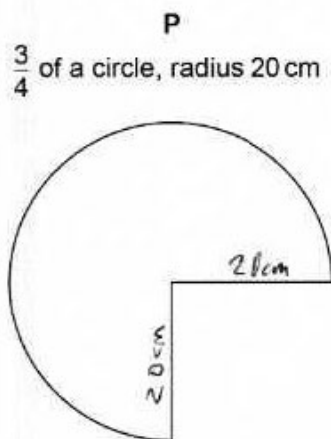
Commentary

Correct areas found and then the $\frac{1}{3}$ of Q is calculated. Only $\frac{1}{4}$ of P has been found, so nothing further can be scored.

2 marks

Question 25, response 3

25 Here are two shapes, P and Q.



Not drawn accurately

How many times bigger is the area of P than the area of Q?

You **must** show your working.

[4 marks]

$$= \pi r^2$$

$$\pi 20^2 \quad \pi 15^2$$

Answer _____

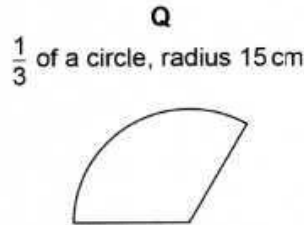
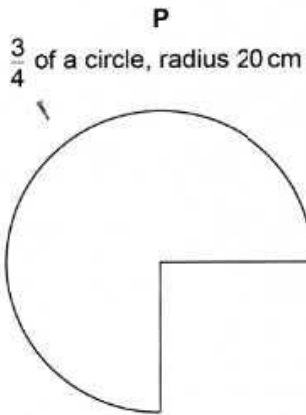
Commentary

The correct formula for the area of a circle has been used and correct values substituted in for each shape. Even though the numbers are not processed, this was a correct start and can score the first mark.

1 mark

Question 25, response 4

25 Here are two shapes, P and Q.



Not drawn accurately

How many times bigger is the area of P than the area of Q?
 You **must** show your working.

[4 marks]

$\pi \times 20^2 = 400\pi$ $\pi \times 15^2 = \pi 225$

~~$400\pi - \frac{1}{4} = 30$~~ 30π

$$\begin{array}{r} 20 \overline{) 400} \\ \underline{400} \\ 0 \end{array}$$

$$\begin{array}{r} 20 \overline{) 400} \\ \underline{400} \\ 0 \end{array}$$

$$\begin{array}{r} 20 \overline{) 400} \\ \underline{400} \\ 0 \end{array}$$

Answer 225π

Commentary

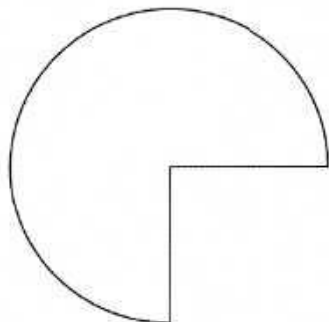
This is correct until the final step. This student has worked out “how much bigger” P is, rather than “how many times bigger”. They needed to divide at the end, instead of subtract.

3 marks

Question 25, response 5

25 Here are two shapes, P and Q.

P
 $\frac{3}{4}$ of a circle, radius 20 cm



Q
 $\frac{1}{3}$ of a circle, radius 15 cm



Not drawn accurately

How many times bigger is the area of P than the area of Q?

You **must** show your working.

[4 marks]

$$\text{P } \pi \times 20^2 \div 4 = 5\pi \times 3 = 15\pi$$

$$\text{Q } \pi \times 15^2 \div 3 = 5\pi$$

$$\frac{15\pi}{5\pi} = 3$$

Answer 3

Commentary

This is not the correct way to find the area of a circle. The 20 and the 15 should each have been squared.

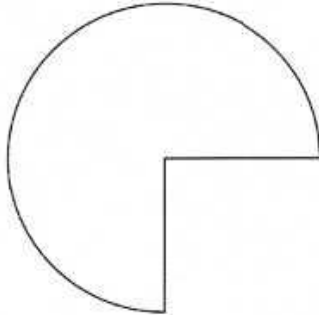
0 marks

Question 25, response 6

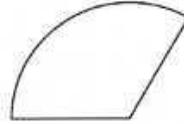
25

Here are two shapes, P and Q.

P
 $\frac{3}{4}$ of a circle, radius 20 cm



Q
 $\frac{1}{3}$ of a circle, radius 15 cm



Not drawn accurately

How many times bigger is the area of P than the area of Q?

You **must** show your working.

[4 marks]

P: radius = 20 cm

$$20 \div 4 = 5 \times 3 = 15 \text{ cm } \left(\frac{3}{4} \text{ of } 20 \right)$$

Q: ~~radius~~ radius = 15 cm

$$15 \div 3 = 5 \times 1 = 5 \text{ cm } \left(\frac{1}{3} \text{ of } 15 \right)$$

$$5 \times 3 = 15$$

Answer 3 times bigger

Commentary

The fractions here have been used, but applied to the radius of each circle, not the area.

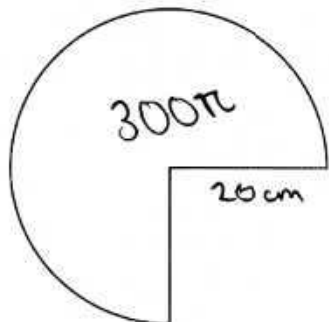
0 marks

Question 25, response 7

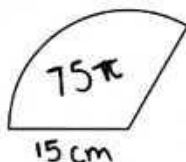
25

Here are two shapes, P and Q.

P
 $\frac{3}{4}$ of a circle, radius 20 cm



Q
 $\frac{1}{3}$ of a circle, radius 15 cm



Not drawn accurately

How many times bigger is the area of P than the area of Q?

You **must** show your working.

[4 marks]

$$\pi r^2 = 20^2 = 400\pi \div 4 = 100\pi$$

$$400\pi - 100\pi = 300\pi$$

$$20 \times 20 = 400$$

$$15^2 \pi = 225\pi \div 3 = 75\pi$$

$$300 \div 75 = 4$$

$$75 + 75 = 150$$

Answer $\times 4$

Commentary

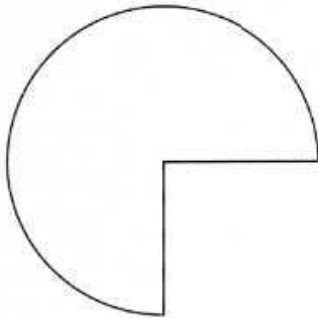
This is a perfect response with everything set out so that it's easy for the student and the marker to follow.

4 marks

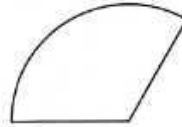
Question 25, response 8

25 Here are two shapes, P and Q.

P
 $\frac{3}{4}$ of a circle, radius 20 cm



Q
 $\frac{1}{3}$ of a circle, radius 15 cm



Not drawn accurately

How many times bigger is the area of P than the area of Q?
 You **must** show your working.

[4 marks]

$A = 2\pi r^2$
 $A = 2 \times \pi \times 20$
 $= 60 \times 0.75$
 $=$
 $\frac{3}{4} = 0.75$
 $\frac{1}{3} = 0.33$
 $A = 2 \times \pi \times 15$

Answer _____

Commentary

This student has used the formula for circumference instead of area.

0 marks

Question 26

26 Solve $\frac{2w}{15} = \frac{4}{5}$

[2 marks]

$w =$ _____

Question 26, response 1

26

Solve $\frac{2w}{15} = \frac{4}{5}$

[2 marks]

$\frac{12}{15} \frac{2w}{15} = \frac{4}{5}$

$w = 12$

Commentary

This student has correctly worked out that it would be $\frac{12}{15}$ that simplifies to $\frac{4}{5}$ but they haven't noticed that they need to halve the 12.

0 marks

Question 26, response 2

26 Solve $\frac{2w}{15} = \frac{4}{5}$

$$\times 3 \quad \frac{12}{15} = \frac{2 \times 6}{15}$$

$$w = 6$$

Commentary

The $\frac{12}{15}$ has been linked with the 2 on this script, so the student could arrive at the final answer of 6.

2 marks

Question 26, response 3

26 Solve $\frac{2w}{15} = \frac{4}{5}$

[2 marks]

$$\begin{array}{l} \frac{\overset{\div 2}{2w}}{15} = \frac{\overset{\div 2}{4}}{5} \div \frac{2}{1} = \frac{4}{5} \times \frac{1}{2} = \frac{4}{10} \\ \frac{w}{15} = \frac{4}{10} \quad \frac{4}{10} \times \frac{15}{1} = \frac{60}{10} \\ \times 15 \quad \times 15 \\ w = \underline{\quad 6 \quad} \end{array}$$

Commentary

Every step is clearly processed to move each of the numbers away from the left hand side of the equation. It's good to move things one at a time, so that nothing gets missed or processed twice by mistake.

2 marks

Question 26, response 4

26 Solve $\frac{2w}{15} = \frac{4}{5}$

$$\frac{2w}{15} = \frac{4}{5}$$

$$w = 4 \div 5 \times 15 \div 2$$

$$w =$$

$$w =$$

Commentary

If the right hand side had been correctly processed, this would have been fully correct. Perfect method, just unfinished.

1 mark

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