PINPOINT REVISION PACKS

75_to_100_Percent_Pinpoint_AI_Pack

Time Allocation = 87mins , Max = 77 Marks

Calculated Grade Boundaries:

Grade	Marks
5-	26
5	52
5+	77

Question 1 (AO3): (No Calc) 23% of students got this right (3 marks)

6

pen	25p
pencil	5p
ruler	20p

Rosie has £10 to spend on pens and pencils.

She has to buy the same number of pens as pencils.

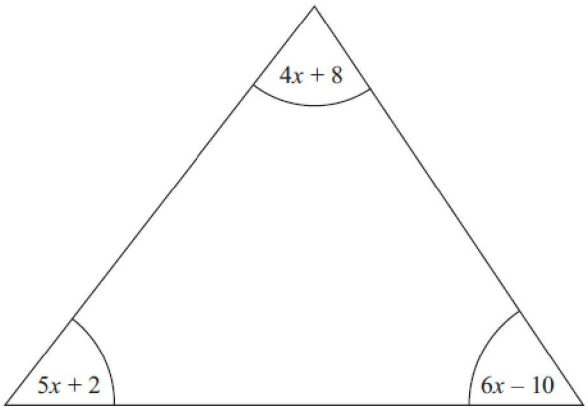
What is the greatest number of pens she can buy?

.....

(Total for Question 6 is 3 marks)

Question 2 (AO2): 23% of students got this right (5 marks)

16. The diagram shows a triangle.



All the angles are measured in degrees.
Show that the triangle is isosceles.

(Total 5 marks)

Question 3 (AO1): (No Calc) 23% of students got this right (2 marks)

25. Write the following numbers in order of size.
Start with the smallest number.

0.038×10^{2} 3800×10^{-4} 380 0.38×10^{-1}

.....

(Total 2 marks)

Question 4 (AO1): (No Calc) 23% of students got this right (3 marks)

18. Work out an estimate for the value of

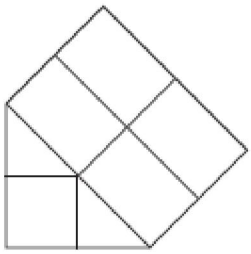
$$\frac{6.8\times191}{0.051}$$

.....

(Total 3 marks)

Question 5 (AO2): 22% of students got this right (3 marks)

17. Here is a prism.
It is made by cutting a solid cube of side 2 cm in half.



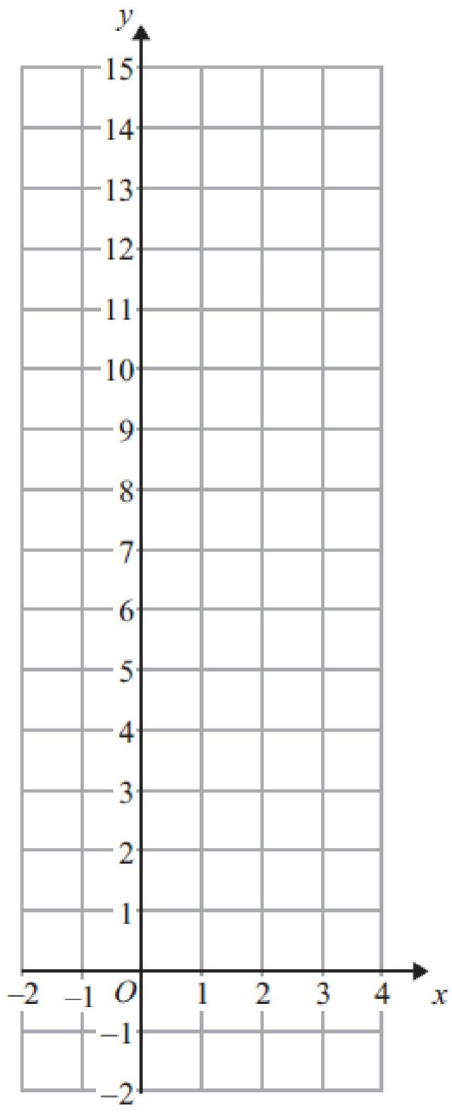
Find the volume of the prism.

.....

(Total 3 marks)

Question 6 (AO1): (No Calc) 19% of students got this right (3 marks)

22.a



(a) On the grid, draw the graph of $y = 3x + 5$ for values of x from –2 to 3

(3)

Question 7 (AO1): (No Calc) 19% of students got this right (3 marks)

24. Arwen buys a car for £4000
The value of the car depreciates by 10% each year.

Work out the value of the car after two years.

£ .....

(Total 3 marks)

Question 8 (AO1): (No Calc) 19% of students got this right (3 marks)

17 Work out $4\frac{2}{3} - 1\frac{2}{5}$

.....

(Total for Question 17 is 3 marks)

Question 9 (AO3): (No Calc) 17% of students got this right (3 marks)

12. There are 11 counters in a bag.
6 of these counters are green.
5 of these counters are red.

Some more red counters are put into the bag.

A counter is then taken at random from the bag.

The probability that the counter is red is $\frac{3}{5}$

How many red counters were put into the bag?

.....

(Total 3 marks)

Question 10 (AO3): (No Calc) 14% of students got this right (5 marks)

25 (a) Here are the fourth and fifth terms of a Fibonacci-type sequence.

____ ____ ____ 28 43

Each term is the sum of the previous two terms.
Show that the first term is 2

[2 marks]

25 (b) Here are the first and third terms of a different Fibonacci-type sequence.

a ____ b ____ ____

Each term is the sum of the previous two terms.
Work out an expression in terms of a and b for the fifth term.

[3 marks]

Answer _____

Question 11 (AO1): 14% of students got this right (3 marks)

19. The normal price of a television is reduced by 30% in a sale.

The sale price of the television is £350

Work out the normal price of the television.

£.....

(Total 3 marks)

Question 12 (AO1): (No Calc) 9% of students got this right (2 marks)

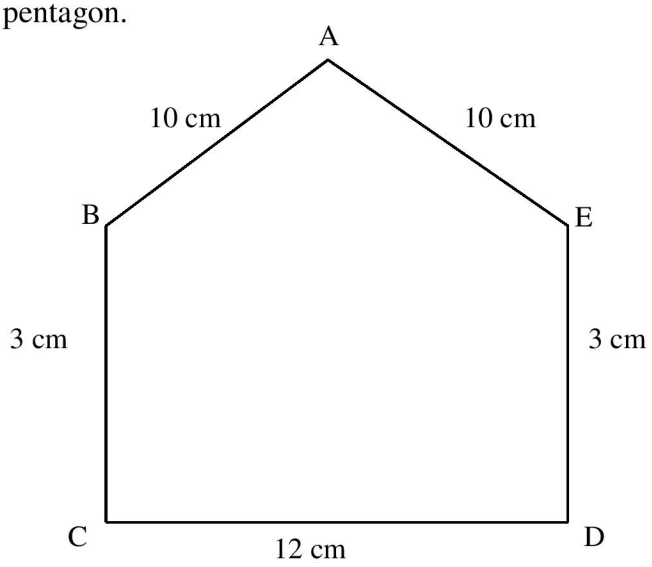
16 Change 2100 mm^3 into cm^3.

..... cm^3

(Total for Question 16 is 2 marks)

Question 13 (AO3): (No Calc) 9% of students got this right (5 marks)

19 *ABCDE* is a pentagon.



Work out the area of *ABCDE*.

cm²

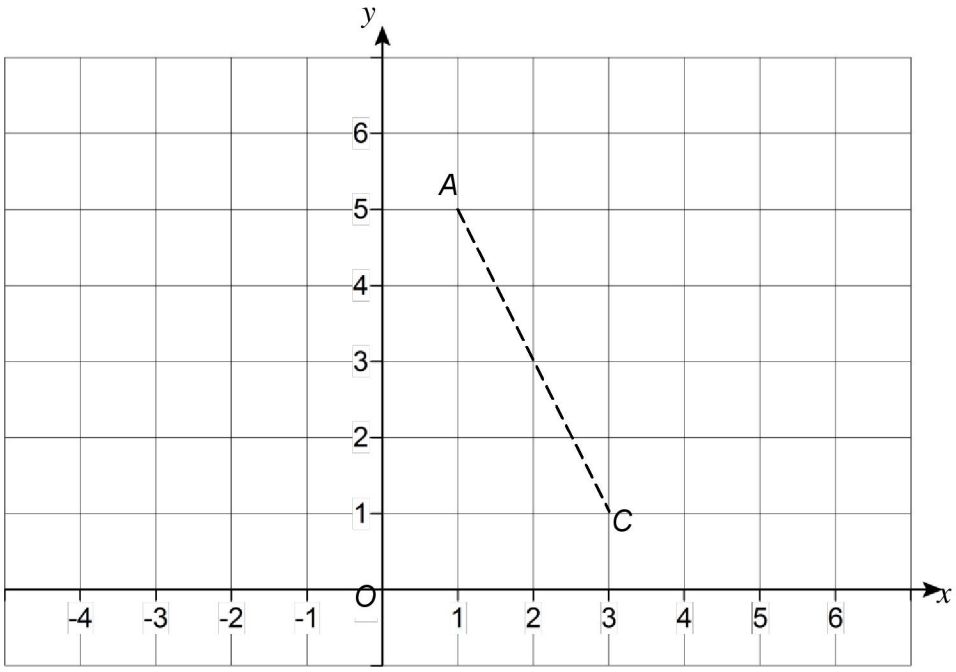
(Total for Question 19 is 5 marks)

Question 14 (AO3): (No Calc) 9% of students got this right (2 marks)

28 *AC* is a diagonal of kite *ABCD*.

A is the point (1, 5)

C is the point (3, 1)



The diagonals of the kite intersect at *M*, the midpoint of *AC*.

$AM = BM$

$BM : MD = 1 : 2$

Work out possible coordinates for *B* and *D*.

[2 marks]

B (_____ , _____) and *D* (_____ , _____)

Question 15 (AO1): (No Calc) 8% of students got this right (5 marks)

21.

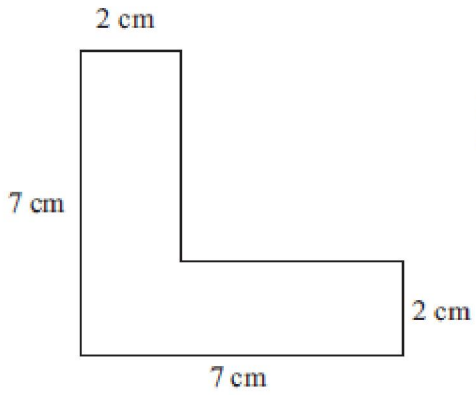


Diagram **NOT** accurately drawn

The diagram shows the cross-section of a solid prism.
The length of the prism is 2 m.

The prism is made from metal.
The density of the metal is 8 grams per cm^3.

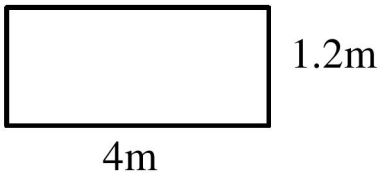
Work out the mass of the prism.

.....

(Total 5 marks)

Question 16 (AO3): (No Calc) 8% of students got this right (5 marks)

21a The diagram shows a rectangular wall.



Frank is going to cover the wall with rectangular tiles.
Each tile is 40 cm by 30 cm.
$\frac{2}{5}$ of the tiles will be white.
Some of the tiles will be green.
The rest of the tiles will be blue.

The ratio of the number of green tiles to the number of blue tiles will be 1 : 1

(a) Assuming there are no gaps between the tiles, how many tiles of each colour will Frank need?

white tiles .....

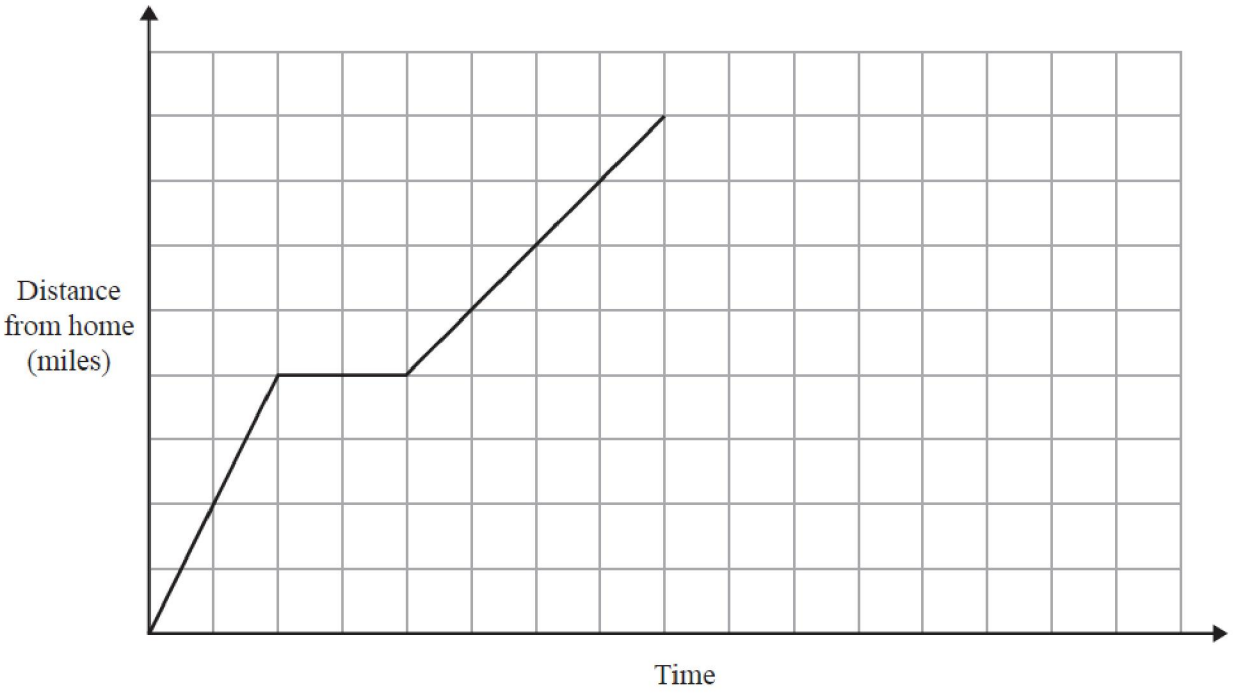
green tiles .....

blue tiles .....

(5)

Question 17 (AO2): (No Calc) 8% of students got this right (4 marks)

22 On Monday Ria delivered a parcel to a hospital.
The travel graph represents Ria's journey to the hospital.



Ria left home at 12 00
She drove for 30 minutes at a constant speed of 50 mph.
She then stopped for a break.

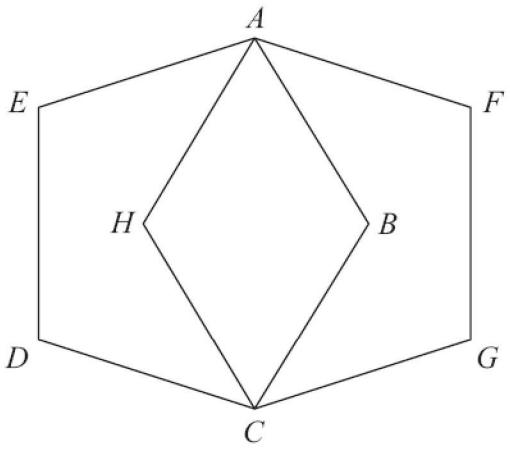
Ria then drove to the hospital at a constant speed.
She was at the hospital for 60 minutes.
She then drove home at a constant speed of 20 mph.

Show that she does not arrive home before 17 00

(Total for Question 22 is 4 marks)

Question 18 (AO2): 7% of students got this right (4 marks)

20.



ABCDE and *AFGCH* are regular pentagons.
The two pentagons are the same size.

Work out the size of angle *EAH*.
You must show how you got your answer.

.....°

(Total 4 marks)

Question 19 (AO3): (No Calc) 5% of students got this right (4 marks)

20 On Monday, Tarek travelled by train from Manchester to London.

Tarek's train left Manchester at 09 00
It got to London at 11 30
The train travelled at an average speed of 90 miles per hour.

On Wednesday, Gill travelled by train from Manchester to London.

Gill's train also left at 09 00 but was diverted.
The train had to travel an extra 30 miles.
The train got to London at 12 00

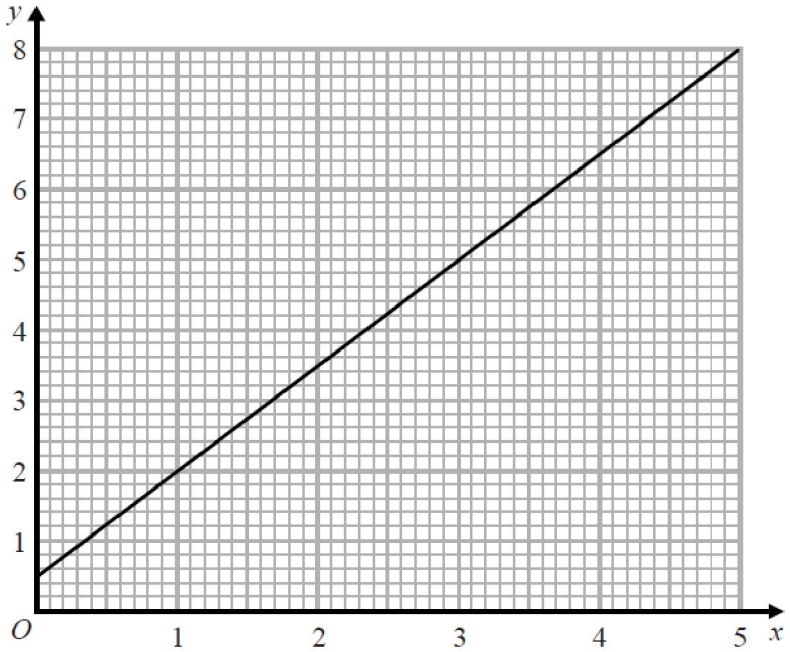
Work out the difference between the average speed of Tarek's train and the average speed of Gill's train.

..... miles per hour

(Total for Question 20 is 4 marks)

Question 20 (AO2): (No Calc) 5% of students got this right (1 marks)

18ai



Phone calls cost £ y for x minutes.

The graph gives the values of y for values of x from 0 to 5

(a) (i) Give an interpretation of the intercept of the graph on the y-axis.

.....

.....

Question 21 (AO3): (No Calc) 5% of students got this right (3 marks)

26. There are 18 packets of sweets and 12 boxes of sweets in a carton.

The mean number of sweets in all the 30 packets and boxes is 14.
The mean number of sweets in the 18 packets is 10.

Work out the mean number of sweets in the boxes.

.....

(Total 3 marks)

Question 22 (AO3): (No Calc) 4% of students got this right (2 marks)

23 A number, y, is rounded to 2 significant figures.

The result is 0.54

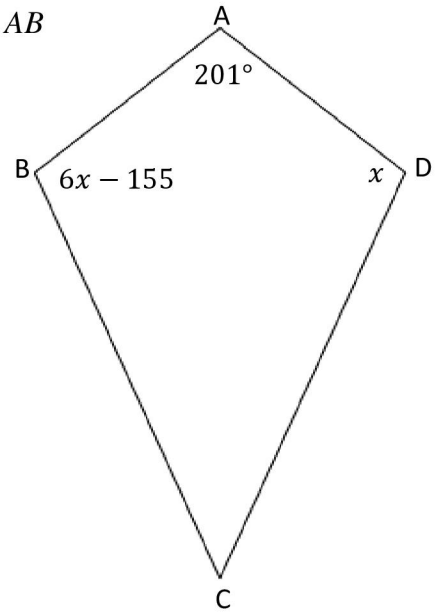
Write down the error interval for y.

.....

(Total for Question 23 is 2 marks)

Question 23 (AO3): (No Calc) 4% of students got this right (4 marks)

15 $ABCD$ is a kite with $AD = AB$



Find the size of the smallest angle of the kite.

..... °

(Total for Question 15 is 4 marks)

Answers to Qn 1 (AO3): (No Calc) 23% of students got this right

6

pen	25p
pencil	5p
ruler	20p

Rosie has £10 to spend on pens and pencils.

She has to buy the same number of pens as pencils.

What is the greatest number of pens she can buy?

25p + 5p = 30p

$1000 \div 30 = \frac{100}{3}$

33.33…

33 pens

Answers to Qn 2 (AO2): 23% of students got this right

Question		Working	Answer	Mark	Notes
16.			"**two** angles are **equal** so the triangle is **isosceles**"	5	M1 for $6x - 10 + 4x + 8 + 5x + 2$ **or** $15x$ M1 for $6x - 10 + 4x + 8 + 5x + 2 = 180$ **or** $15x = 180$ **or** $(x =)\ 180 \div 15$ A1 $x = 12$ M1 (ft from '12' if M2 scored) for $5 \times$ '12' + 2 **or** $6 \times$ '12' $- 10$ **or** $62(^{o})$ **or** $4 \times$ '12' + 8 **or** $56(^{o})$ C1 both base angles as 62 **and two** angles are **equal** so the triangle is **isosceles** **OR** M1 $5x + 2 = 6x - 10$ **or** $2 + 10 = 6x - 5x$ A1 $x = 12$ M1 $5 \times 12 + 2$ **or** $6 \times 12 - 10$ **or** $62(^{o})$ **or** $4 \times 12 + 8$ **or** $56(^{o})$ M1 checking their angles add to 180^{o}, "62"+"62"+"56"=180 C1 both base angles as 62 **and two** angles are **equal** so the triangle is **isosceles**

Answers to Qn 3 (AO1): (No Calc) 23% of students got this right

25.		0.38×10^{-1}, 3800×10^{-4}, 0.038×10^{2}, 380	Correct order	2	M1 changing any one correctly or at least 3 in the correct order (ignoring one) or reverse order A1 for correct order (accept any form)

Answers to Qn 4 (AO1): (No Calc) 23% of students got this right

18. Work out an estimate for the value of

$$\frac{6.8\times191}{0.051}$$

$\frac{7\times200}{0.05}=\frac{1400}{0.05}$

28000

(Total 3 marks)

Answers to Qn 5 (AO2): 22% of students got this right

17.		$2 \times 2 \times 2 = 8$ $8 \div 2 = 4$	4 cm^3	3	M1 for $2 \times 2 \times 2 \div 2$ oe or $1 + 1 + 0.5 + 0.5 + 0.5 + 0.5$ oe A1 cao B1 (indep) for cm^3

Answers to Qn 6 (AO1): (No Calc) 19% of students got this right

<table>
<tr>
<td>22.</td>
<td>(a)</td>
<td>$y = 3x + 5$
<table><tr><td>x</td><td>–2</td><td>–1</td><td>0</td><td>1</td><td>2</td><td>3</td></tr><tr><td>y</td><td>–1</td><td>2</td><td>5</td><td>8</td><td>11</td><td>14</td></tr></table></td>
<td>Correct line from (–2, –1) to (3, 14)</td>
<td>3</td>
<td>(Table of values / calculation of values)
M1 for at least 2 correct attempts to find points by substituting values of x.

M1 ft for plotting at least 2 of their points (any points plotted from their table must be correctly plotted)

A1 for correct line between $x = –2$ and $x = 3$

(No table of values)
M1 for at least 2 correct points with no more than 2 incorrect points

M1 for at least 2 correct points (and no incorrect points) plotted

OR line segment of $y = 3x + 5$ drawn
A1 for correct line between $x = –2$ and $x = 3$

(Use of $y = mx + c$)
M1 for line drawn with gradient of 3
OR line drawn with a y intercept of 5

M1 for line drawn with gradient of 3
AND line drawn with a y intercept of 5

A1 for correct line between $x = –2$ and $x = 3$

SC : B2 for the correct line from $x = 0$ to $x = 3$</td>
</tr>
</table>

Answers to Qn 7 (AO1): (No Calc) 19% of students got this right

24.		$4000 - (\frac{10}{100} \times 4000) = 3600$ $3600 - (\frac{10}{100} \times 3600)$	3240	3	M1 for $4000 - \frac{10}{100}$ or 0.9×4000 (or equivalent) or 3600 or 400 or 3200 or 800 seen M1 (dep) 10 "3600" $- \frac{10}{100} \times$ "3600" or "3600" $\times$ 0.9 (or equivalent) A1 cao **or** M2 for 29.04000×0.9^2 (M1 for 4000×0.9^3) A1 cao [SC: B2 for an answer of £4840, with or without working]

Answers to Qn 8 (AO1): (No Calc) 19% of students got this right

17 Work out $4\frac{2}{3} - 1\frac{2}{5}$

$\frac{14}{3} - \frac{7}{5} = \frac{70}{15} - \frac{21}{15} = \frac{49}{15}$

Answers to Qn 9 (AO3): (No Calc) 17% of students got this right

12. There are 11 counters in a bag.
6 of these counters are green.
5 of these counters are red.

Some more red counters are put into the bag.

A counter is then taken at random from the bag.

The probability that the counter is red is $\frac{3}{5}$

How many red counters were put into the bag?

$\frac{3}{5} = \frac{9}{15}$

$9 - 5 = 4$

(Total 3 marks)

Answers to Qn 10 (AO3): (No Calc) 14% of students got this right

25 (a) Here are the fourth and fifth terms of a Fibonacci-type sequence.

____ ____ ____ 28 43

Each term is the sum of the previous two terms.
Show that the first term is 2

3rd Term: 43 – 28 = 15

2nd Term: 28 – 15 = 13

1st Term: 15 – 13 = 2

25 (b) Here are the first and third terms of a different Fibonacci-type sequence.

a ____ b ____ ____

Each term is the sum of the previous two terms.
Work out an expression in terms of a and b for the fifth term.

1st term: a

2nd term: $b - a$

3rd term: b

4th term: $b - a + b = 2b - a$

5th term: $2b - a + b = 3b - a$

Answer $3b - a$

Answers to Qn 11 (AO1): 14% of students got this right

19. The normal price of a television is reduced by 30% in a sale.

The sale price of the television is £350

Work out the normal price of the television.

$\frac{350}{70} \times 100$

£500

(Total 3 marks)

Answers to Qn 12 (AO1): (No Calc) 9% of students got this right

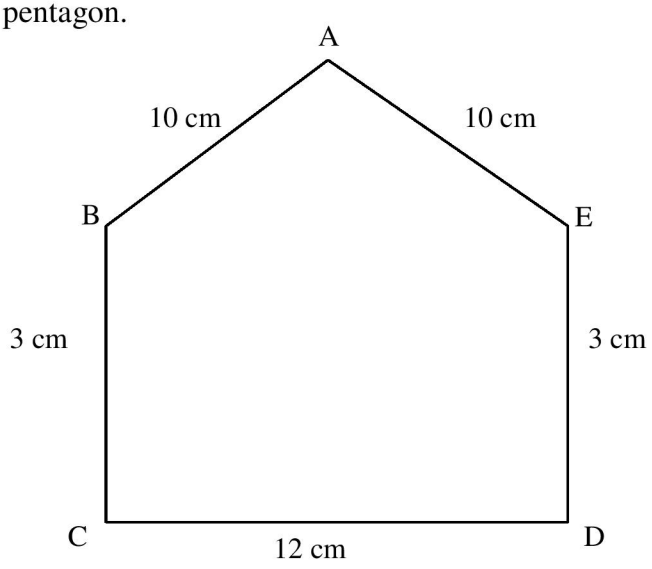
16 Change $2100\ \text{mm}^3$ into cm^3.

$2100 \div 10^3$

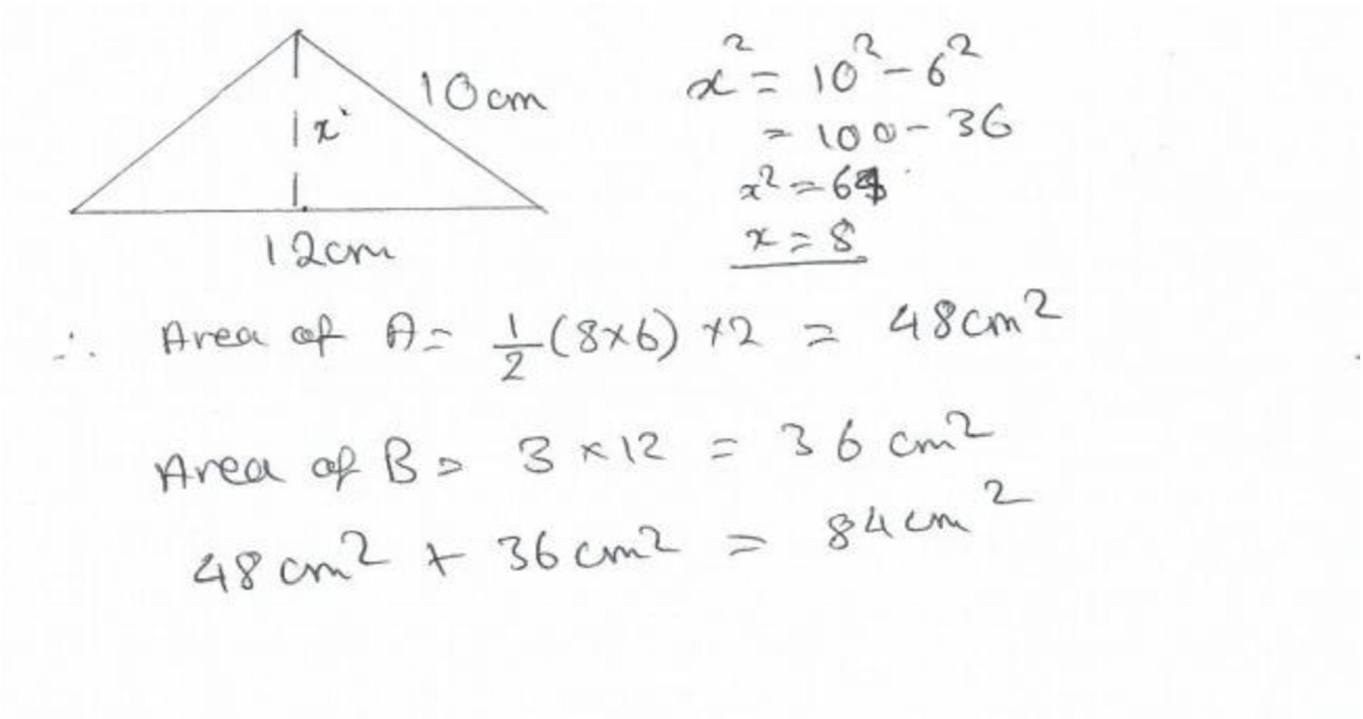
$2100 \div 1000 = 2.1\text{cm}^3$

Answers to Qn 13 (AO3): (No Calc) 9% of students got this right

19 *ABCDE* is a pentagon.



Work out the area of *ABCDE*.

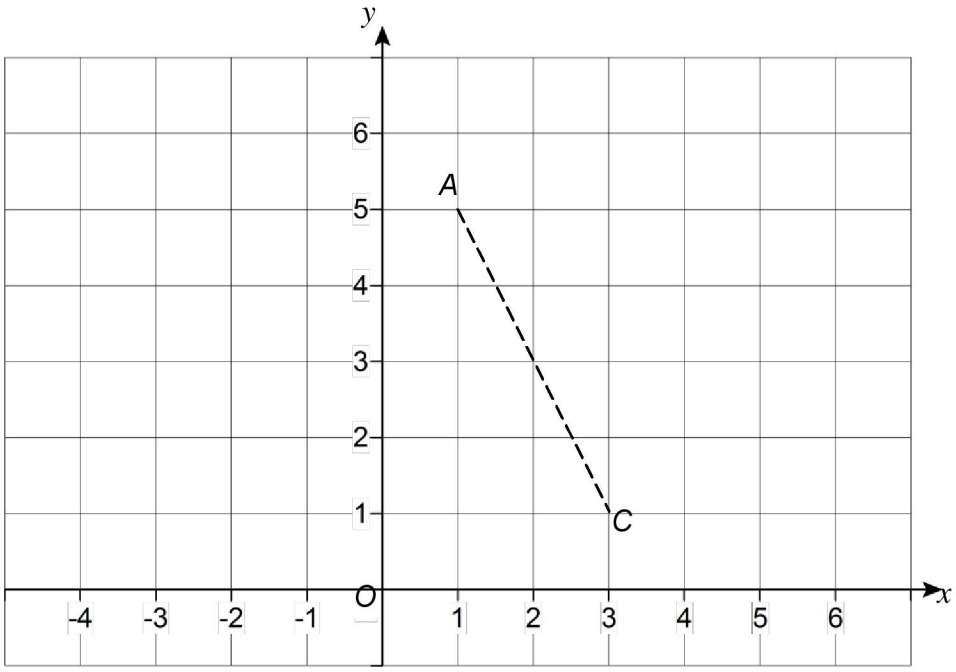


Answers to Qn 14 (AO3): (No Calc) 9% of students got this right

28 *AC* is a diagonal of kite *ABCD*.

A is the point (1, 5)

C is the point (3, 1)



The diagonals of the kite intersect at *M*, the midpoint of *AC*.

$AM = BM$

$BM : MD = 1 : 2$

Work out possible coordinates for *B* and *D*.

B (0, 2) and D (6, 5)
or
B (4, 4) and D (–2, 1)

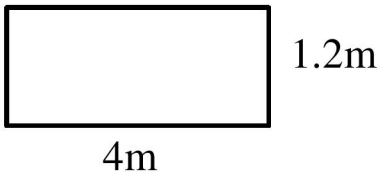
B (_____ , _____) and *D* (_____ , _____)

Answers to Qn 15 (AO1): (No Calc) 8% of students got this right

21.		$(7 \times 2 + 2 \times 5) \times 200 = 4800$ 4800×8	38 400 g	5	M1 for 7×2 or 2×5 or 7×7 or 5×5 or 2×2 M1 for '7×2' + '2×5' (or equivalent) or '7×7' – '5×5' M1(dep on first M) for '24' × 200 or '0.0024' × 2 M1 for '4800' × 8 or '0.0048' × 8 000 000 or '0.0048' × 8000 A1 for 38 400g or 38.4kg (SC B3 for any answer including digits 384)

Answers to Qn 16 (AO3): (No Calc) 8% of students got this right

21 The diagram shows a rectangular wall.



Frank is going to cover the wall with rectangular tiles.
Each tile is 40 cm by 30 cm.
$\frac{2}{5}$ of the tiles will be white.
Some of the tiles will be green.
The rest of the tiles will be blue.

The ratio of the number of green tiles to the number of blue tiles will be 1 : 1

(a) Assuming there are no gaps between the tiles, how many tiles of each colour will Frank need?

400cm ÷ 40 cm = 10

120cm ÷ 30cm = 4

4 × 10 = 40 Tiles

$\frac{2}{5}$ × 40 = 16 white tiles

40 – 16 = 24

24 in 1:1 ratio

12:12

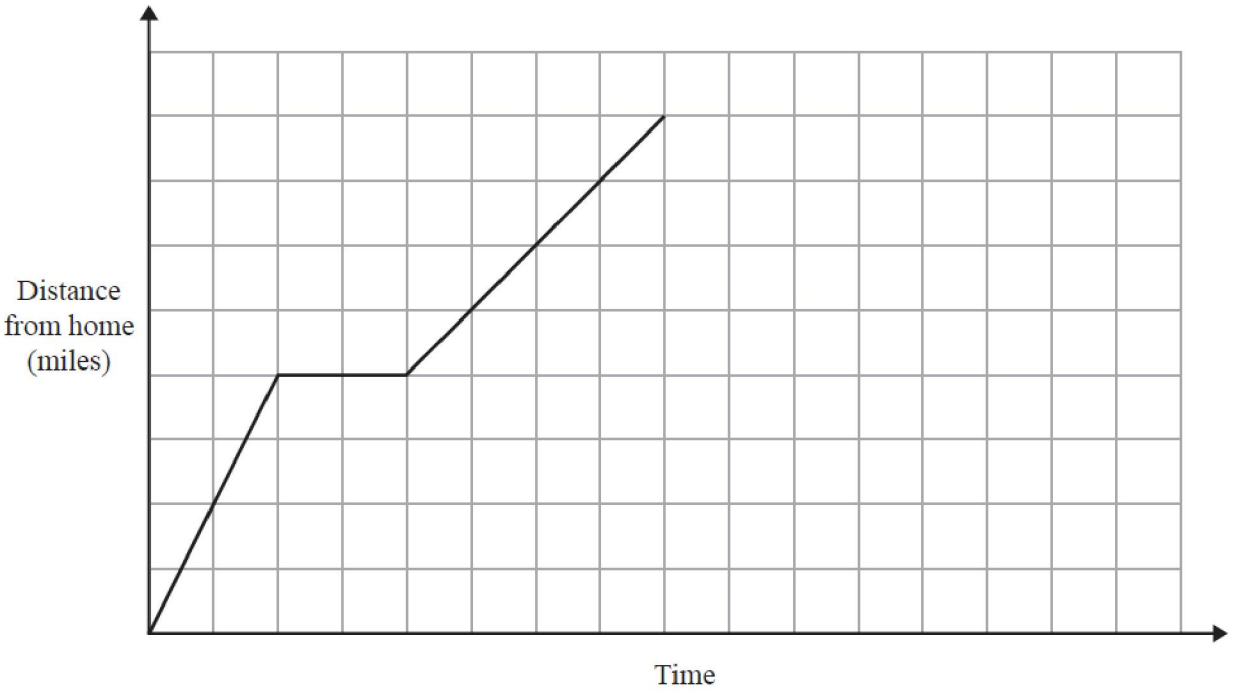
White tiles: 16

Green tiles: 12

Blue tiles: 12

Answers to Qn 17 (AO2): (No Calc) 8% of students got this right

22 On Monday Ria delivered a parcel to a hospital.
The travel graph represents Ria's journey to the hospital.



Ria left home at 12 00
She drove for 30 minutes at a constant speed of 50 mph.
She then stopped for a break.

Ria then drove to the hospital at a constant speed.
She was at the hospital for 60 minutes.
She then drove home at a constant speed of 20 mph.

Show that she does not arrive home before 17 00

50 mph × 0.5 h = 25 miles

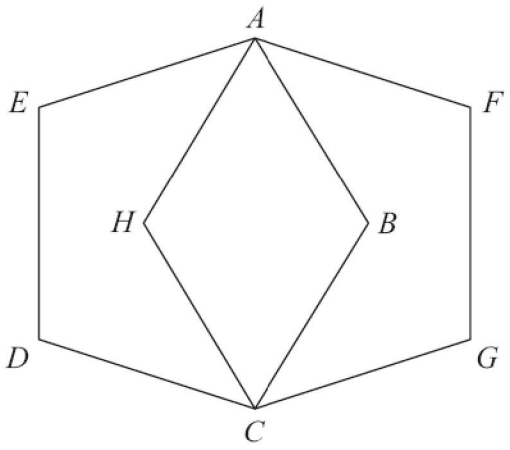
50 miles @ 20 mph = $\frac{50}{20} = \frac{5}{2} = 2.5$ hours

1500 + 2.5 hours

= 17:30

Answers to Qn 18 (AO2): 7% of students got this right

20.



ABCDE and *AFGCH* are regular pentagons.
The two pentagons are the same size.

Work out the size of angle *EAH*.
You must show how you got your answer.

540 ÷ 5 = 108

(360 – (2 × 108)) ÷ 2 = 72

108 – 72 = 36

36

(Total 4 marks)

Answers to Qn 19 (AO3): (No Calc) 5% of students got this right

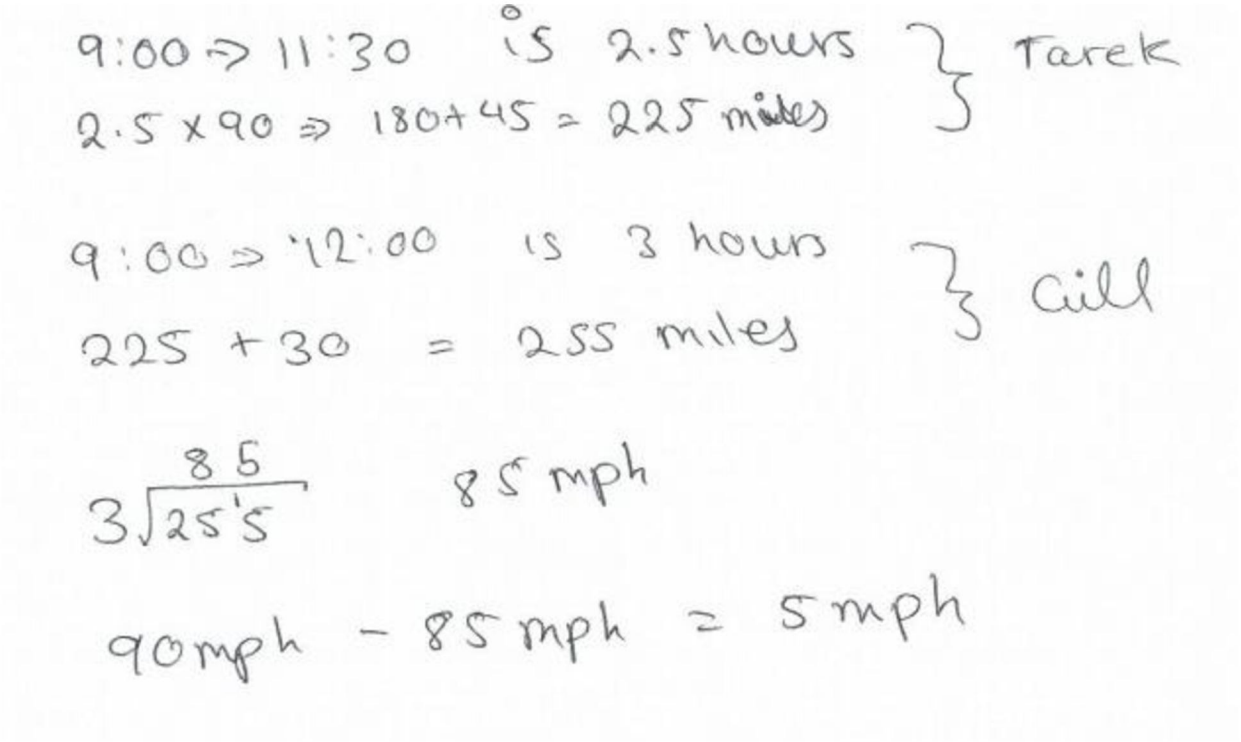
20 On Monday, Tarek travelled by train from Manchester to London.

Tarek's train left Manchester at 09 00
It got to London at 11 30
The train travelled at an average speed of 90 miles per hour.

On Wednesday, Gill travelled by train from Manchester to London.

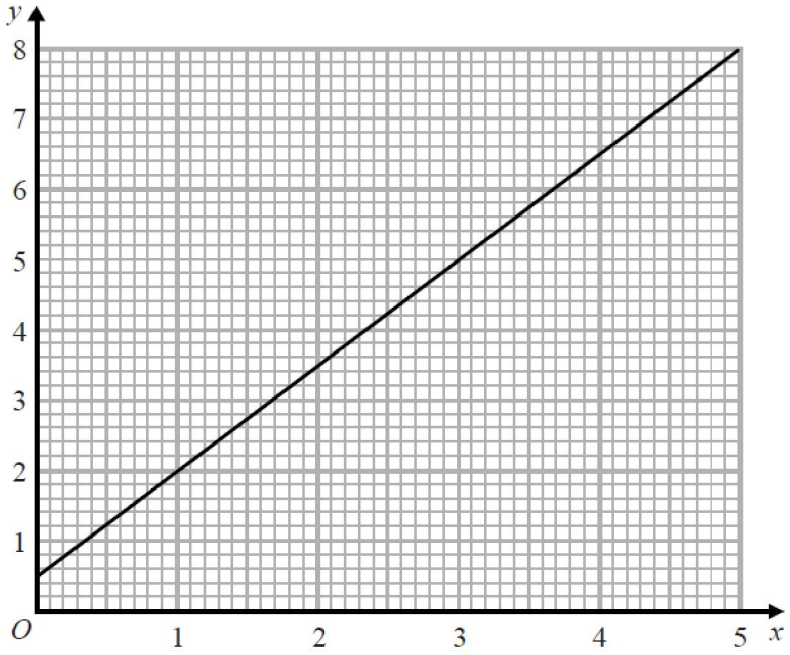
Gill's train also left at 09 00 but was diverted.
The train had to travel an extra 30 miles.
The train got to London at 12 00

Work out the difference between the average speed of Tarek's train and the average speed of Gill's train.



Answers to Qn 20 (AO2): (No Calc) 5% of students got this right

18



Phone calls cost £ y for x minutes.

The graph gives the values of y for values of x from 0 to 5

(a) (i) Give an interpretation of the intercept of the graph on the y-axis.

The starting price of phone calls or the fixed change

Answers to Qn 21 (AO3): (No Calc) 5% of students got this right

26.			48	5	M1 for 8 – 2 (= 6) M1 (indep) for $x^2 + 8^2$ (provided $x \leq 8$) M1 (dep on previous M1) for $\sqrt{(x^2 + 8^2)}$ or $\sqrt{100}$ M1 (dep on M2) for $4 \times 2 + 4 \times$ "10" A1 cao

Answers to Qn 22 (AO3): (No Calc) 4% of students got this right

23 A number, y, is rounded to 2 significant figures.

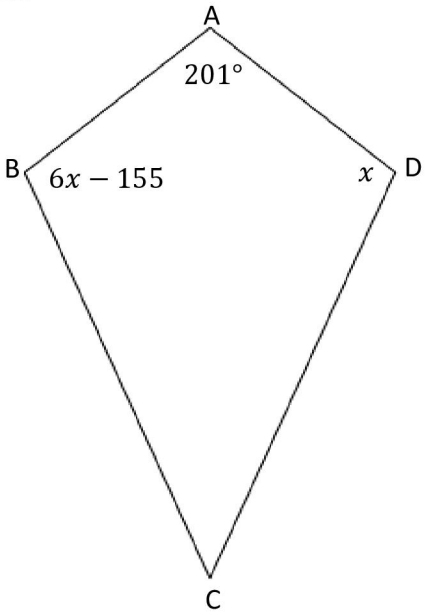
The result is 0.54

Write down the error interval for y.

$0.535 \leq y < 0.545$

Answers to Qn 23 (AO3): (No Calc) 4% of students got this right

15 *ABCD* is a kite with $AD = AB$

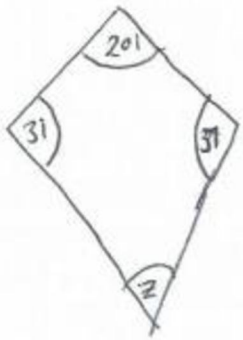


Find the size of the smallest angle of the kite.

$6x - 155 = x$

$5x = 155$

$x = 31^\circ$



$360 - (201 + 31 + 31) = z$

$360 - 263 = z$

$97 = z$

$\angle 201^\circ, 31^\circ, 31^\circ, 97^\circ$

$\therefore$ smallest angle of kite is 31°