

PINPOINT LEARNING

PAPER THREE REVISION PACKS

61_to_82_Percent_Pinpoint_AI_Pack

Time Allocation = 98mins , Max = 87 Marks

Calculated Grade Boundaries:

Grade	Marks
6	15
6+	29
7-	44
7	58
7+	73
8-	87

Question 1 (AO2): 38% of students got this right (3 marks)

10. The scale drawing of a class room is given.
The scale is 1 cm to 3 metres.



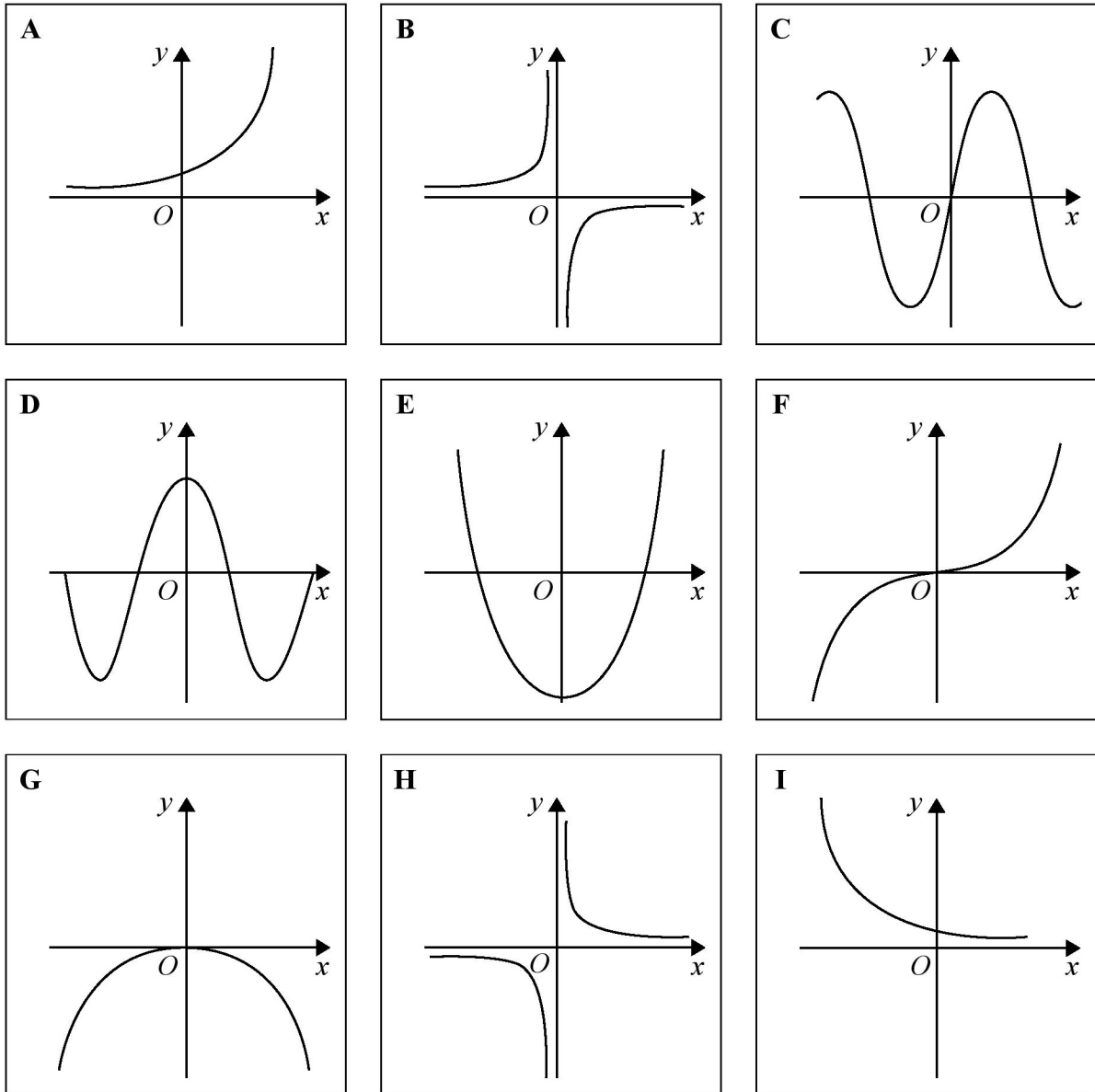
A cupboard is going to be put in the class room.
The cupboard has to be closer to C than it is to D.
The cupboard has to be less than 9 metres from B.

Shade the region where the cupboard can be placed.

(Total 3 marks)

Question 2 (AO1): 36% of students got this right (3 marks)

14 Here are some graphs.



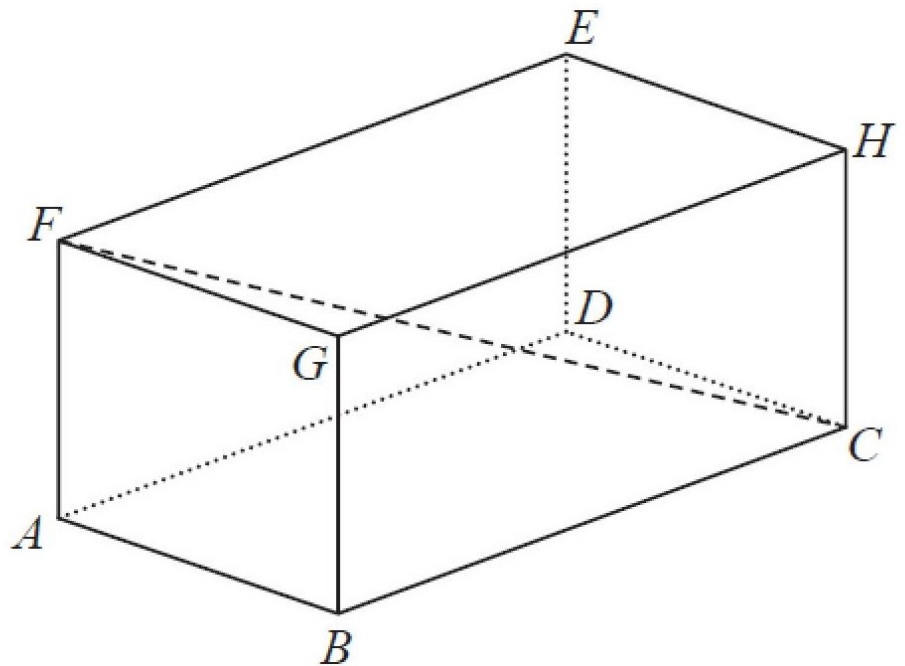
In the table below, match each equation with the letter of its graph.

Equation	Graph
$y = \sin x$	
$y = x^3 + 4x$	
$y = 2^x$	
$y = \frac{4}{x}$	

(Total for Question 14 is 3 marks)

Question 3 (AO3): 36% of students got this right (4 marks)

12 The diagram shows a cuboid $ABCDEFGH$.



$AB = 7$ cm, $AF = 5$ cm and $FC = 15$ cm.

Calculate the volume of the cuboid.

Give your answer correct to 3 significant figures.

Question 4 (AO1): 36% of students got this right (3 marks)

- 7 Liquid **A** has a density of 1.42 g/cm^3
 7 cm^3 of liquid **A** is mixed with 125 cm^3 of liquid **B** to make liquid **C**.

Liquid **C** has a density of 1.05 g/cm^3

Find the density of liquid **B**.

Give your answer correct to 2 decimal places.

Question 5 (AO1): 34% of students got this right (3 marks)

16 There is a large number of cubes in a bag.

Jason wants to work out an estimate for the number of cubes in the bag.

He takes at random 10 cubes from the bag.

He puts a mark on each cube and then puts each cube back in the bag.

Jason shakes the bag and then takes at random 20 of the cubes.

There is a mark on 3 of the cubes.

Work out an estimate for the total number of cubes in the bag.

Question 6 (AO3): 34% of students got this right (1 marks)

21. (a) Factorise $4x^2 - 9$

.....
(1)

Question 7 (AO3): 34% of students got this right (4 marks)

13. Liquid A has a density of 0.7 g/cm^3 .
Liquid B has a density of 1.6 g/cm^3 .

140 g of liquid A and 128 g of liquid B are mixed to make liquid C.

Work out the density of liquid C.

Question 8 (AO2): 33% of students got this right (2 marks)

10 In 2016 the population of the UK was 6.5×10^7

Laura wants to calculate an estimate for the population of the UK in 2020.

She assumes that the population increases by 0.6% each year.

(a) Using Laura's assumption, calculate an estimate for the population of the UK in 2020.

Question 9 (AO3): 33% of students got this right (4 marks)

22.

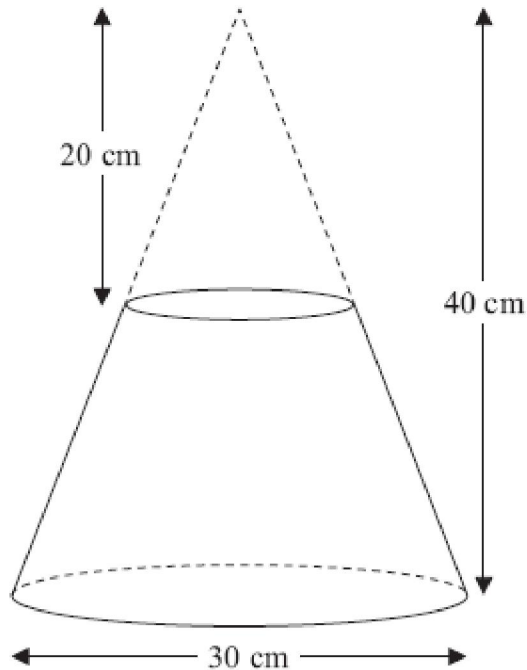


Diagram NOT
accurately drawn

A frustum is made by removing a small cone from a similar large cone.

The height of the small cone is 20 cm.

The height of the large cone is 40 cm.

The diameter of the base of the large cone is 30 cm.

Work out the volume of the frustum.

Give your answer correct to 3 significant figures.

Question 10 (AO1): 32% of students got this right (3 marks)

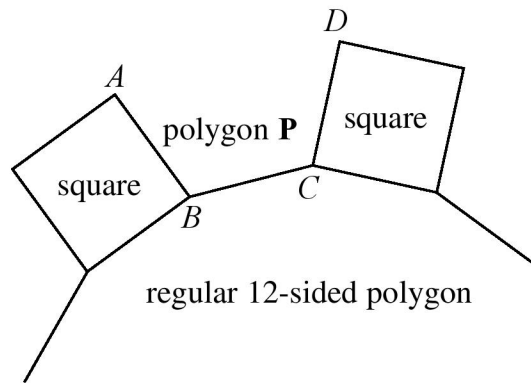
17 Here are the first 5 terms of a quadratic sequence.

1 3 7 13 21

Find an expression, in terms of n , for the n th term of this quadratic sequence.

Question 11 (AO1): 32% of students got this right (4 marks)

- 5 In the diagram, AB , BC and CD are three sides of a regular polygon \mathbf{P} .



Show that polygon \mathbf{P} is a hexagon.
You must show your working.

(Total for Question 5 is 4 marks)

Question 12 (AO1): 31% of students got this right (3 marks)

- 13** The number of slugs in a garden t days from now is p_t where

$$p_0 = 100$$

$$p_{t+1} = 1.06p_t$$

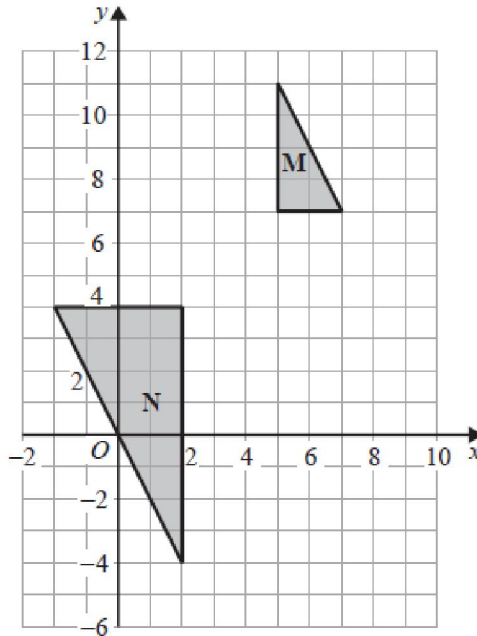
Work out the number of slugs in the garden 3 days from now.

Question 13 (AO3): 30% of students got this right (3 marks)

- 9 Yesterday it took 5 cleaners $4\frac{1}{2}$ hours to clean all the rooms in a hotel.
There are only 3 cleaners to clean all the rooms in the hotel today.
Each cleaner is paid £8.20 for each hour or part of an hour they work.
How much will each cleaner be paid today?

Question 14 (AO1): 30% of students got this right (2 marks)

16.



Describe fully the single transformation that maps triangle **M** onto triangle **N**.

.....

.....

(Total for Question 16 is 2 marks)

Question 15 (AO3): 30% of students got this right (3 marks)

2. On a school trip the ratio of the number of teachers to the number of students is 1 : 15

The ratio of the number of male students to the number of female students is 7 : 5

Work out what percentage of all the people on the trip are female students.

Give your answer correct to the nearest whole number.

.....%

(Total for Question 2 is 3 marks)

Question 16 (AO3): 30% of students got this right (3 marks)

- 13** At the beginning of 2009, Mr Veale bought a company.
The value of the company was £50 000.
Each year the value of the company increased by 2%.

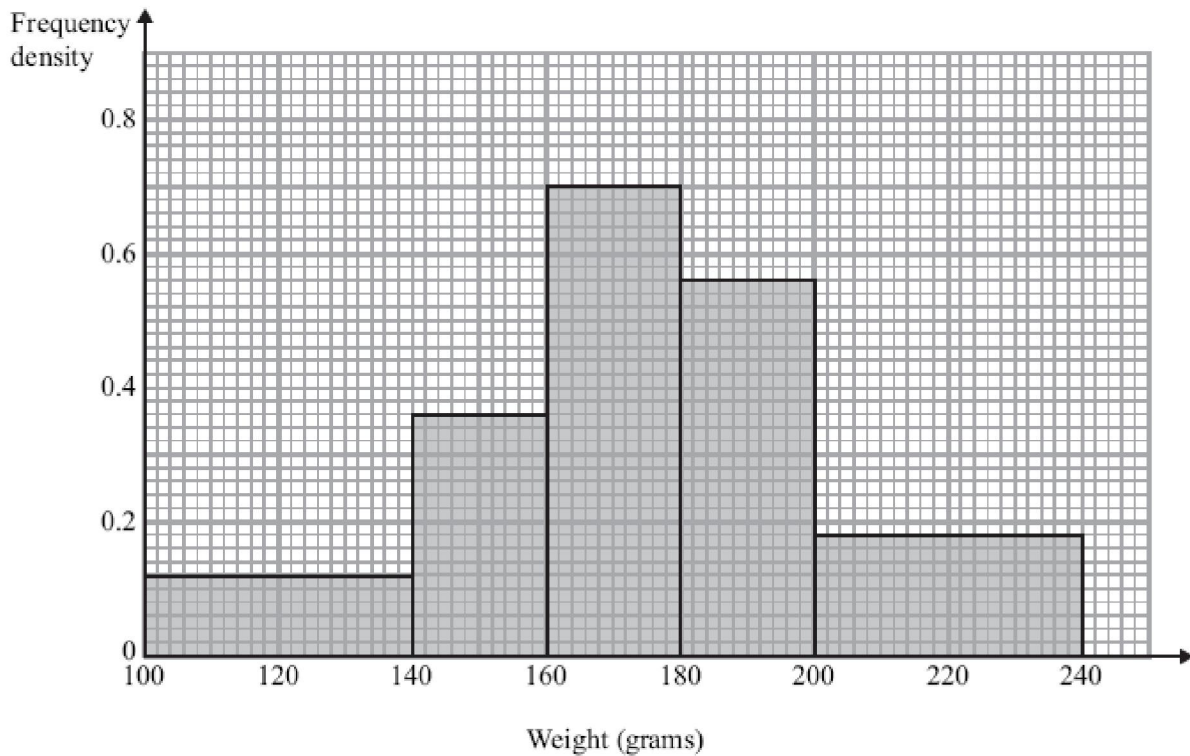
At the beginning of 2009 the value of a different company was £250 000.
In 6 years the value of this company increased to £325 000.

This is equivalent to an increase of $x\%$ each year.

- (b) Find the value of x .
Give your answer correct to 2 significant figures.

Question 17 (AO3): 27% of students got this right (4 marks)

21. The histogram shows some information about the weights of a sample of apples.



Work out the proportion of apples in the sample with a weight between 140 grams and 200 grams.

.....
(Total for Question 21 is 4 marks)

Question 18 (AO3): 25% of students got this right (3 marks)

16 Using algebra, prove that $0.1\overline{36} \times 0.\overline{2}$ is equal in value to $\frac{1}{33}$

(Total for Question 16 is 3 marks)

Question 19 (AO1): 25% of students got this right (3 marks)

20. In a sale normal prices are reduced by 20%.

A washing machine has a sale price of £464

By how much money is the normal price of the washing machine reduced?

£.....

Question 20 (AO3): 24% of students got this right (3 marks)

11 Anna and Bill share some money in the ratio 2 : 5

Anna gets £ A

Bill gets £ B

Carl and Donna share twice as much money as Anna and Bill share.

They share the money in the ratio 3 : 1

Carl gets £ C

Donna gets £ D

Find $A : B : C : D$

Give your answer in its simplest form.

Question 21 (AO2): 24% of students got this right (2 marks)

13. Steve and Carol are participating in a car race.

Steve drives from checkpoint A to checkpoint B, on a bearing of 50° .
Carol will drive from checkpoint A to checkpoint B.

Determine the bearing of A from B.

.....^o

(Total 2 marks)

Question 22 (AO3): 24% of students got this right (5 marks)

*24. $m = \frac{\sqrt{s}}{t}$

$s = 3.47$ correct to 2 decimal places.

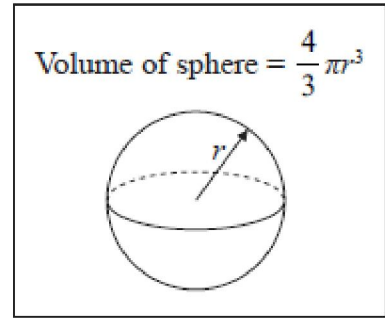
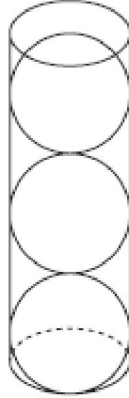
$t = 8.132$ correct to 3 decimal places.

By considering bounds, work out the value of m to a suitable degree of accuracy.

You must show all your working and give a reason for your final answer.

Question 23 (AO2): 23% of students got this right (4 marks)

8. A hollow cylinder has radius r cm and height $6r$ cm.
3 spheres, also of radius r cm, are put into the cylinder.



- (a) Work out the proportion of the cylinder that is **not** filled by the spheres.

.....
(3)

The height of the cylinder is increased by $2r$ cm.
Another sphere of radius r cm is put into the cylinder.

Malcolm says,

“There is no change in the proportion of the cylinder **not** filled by the spheres.”

- (b) Is Malcolm correct?
Justify your answer.

.....
.....
(1)

Question 24 (AO1): 22% of students got this right (3 marks)

20. Solve $3x^2 - 5x - 1 = 0$
Give your solutions correct to 3 significant figures.

.....
(Total for Question 20 is 3 marks)

Question 25 (AO3): 22% of students got this right (3 marks)

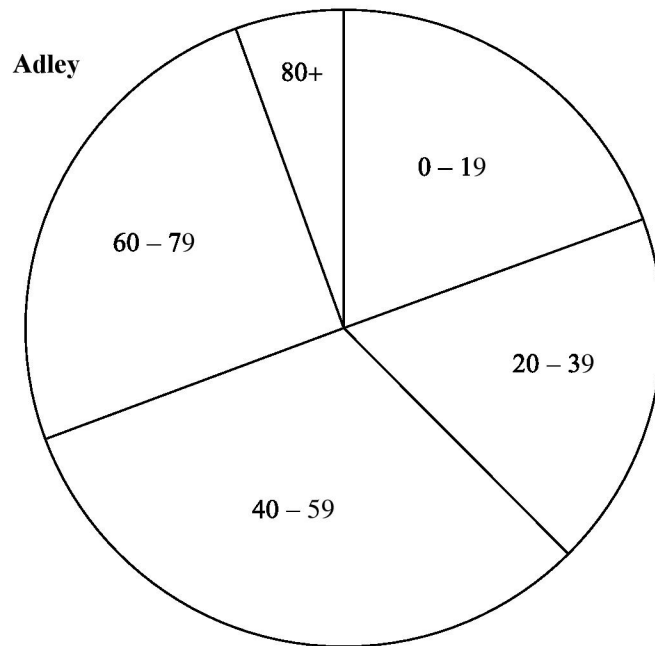
- 9 A savings account pays interest at a rate of $R\%$ per year.
Jack invests £5500 in the account for one year.

At the end of the year, Jack pays tax on the interest at a rate of 40%.
After paying tax, he gets £79.20.

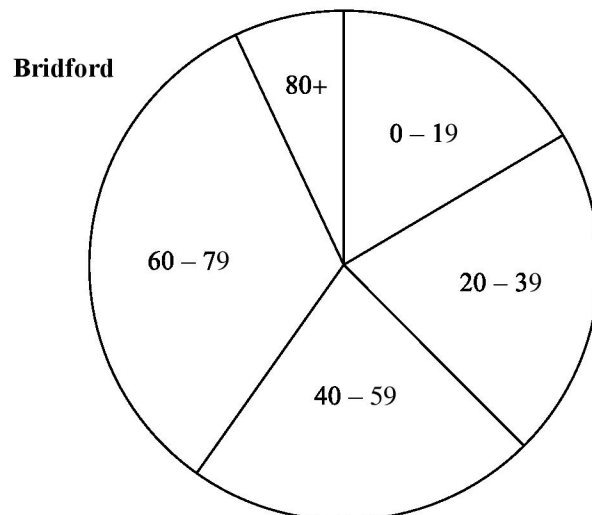
(b) Work out the value of R .

Question 26 (AO3): 19% of students got this right (3 marks)

- 11 The pie chart gives information about the ages, in years, of people living in two towns, Adley and Bridford.



Diagrams
accurately
drawn



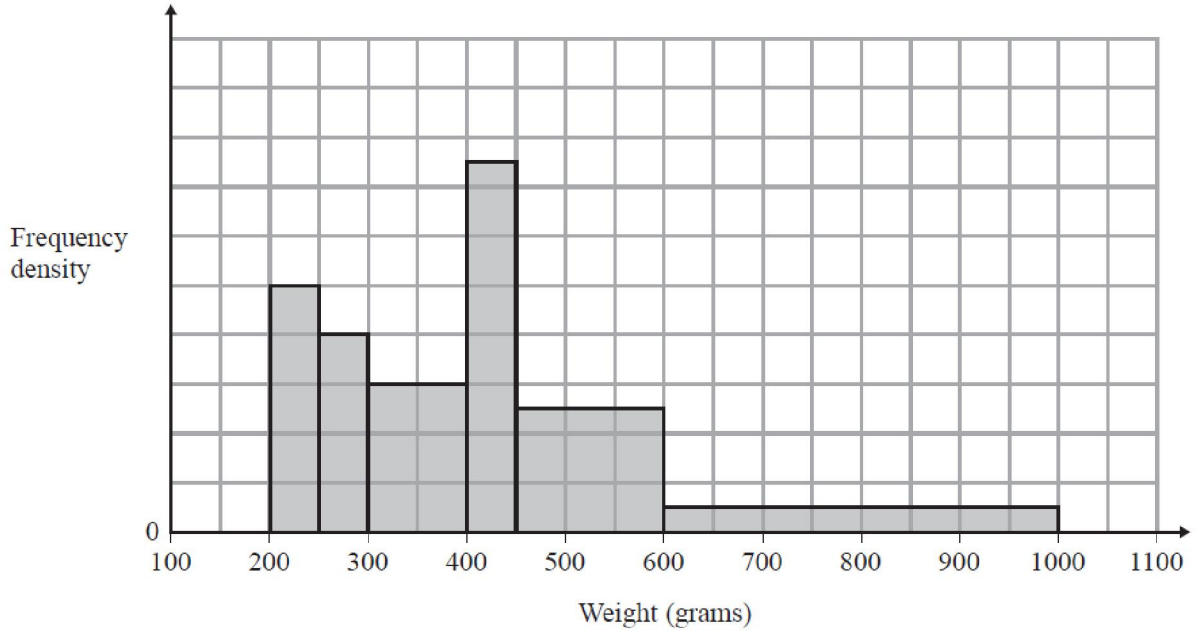
The ratio of the number of people living in Adley to the number of people living in Bridford is given by the ratio of the areas of the pie charts.

What proportion of the total number of people living in these two towns live in Adley **and** are aged 0 – 19?

Give your answer correct to 3 significant figures.

Question 27 (AO2): 18% of students got this right (6 marks)

18. The histogram gives information about the weights of some fish.



The number of fish with a weight between 400 g and 450 g is 7 more than the number of fish with a weight between 250 g and 300 g.

(a) Calculate the total number of fish represented by the histogram.

.....
(3)

(b) (i) Use the histogram to find an estimate for the median weight.

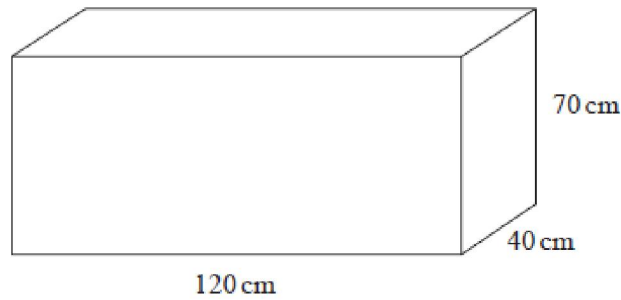
..... g

(ii) Give a reason why your answer to part (b)(i) is only an estimate.

.....
.....

Ext Qn1 (AO2): Only 15% of students got this right(4 marks)

17. The diagram shows Helen's fish tank.
All the dimensions are correct to the nearest centimetre.

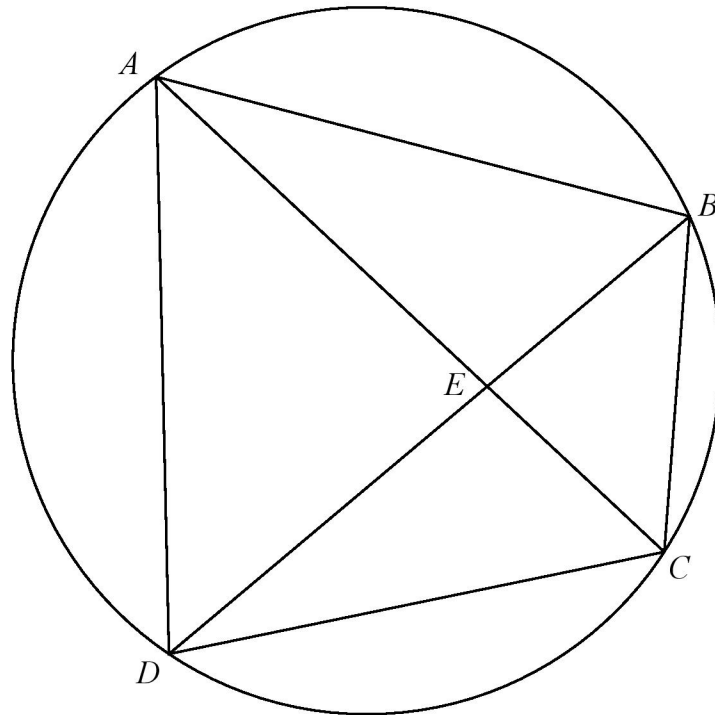


Helen is going to use a bucket to fill the fish tank completely with water.
There are 14 litres, correct to the nearest litre, of water in a full bucket.

Will 25 full buckets of water definitely fill the fish tank?
Justify your answer.

Ext Qn2 (AO1): Only 14% of students got this right(3 marks)

- 15 A, B, C and D are four points on the circumference of a circle.



AEC and BED are straight lines.

Prove that triangle ABE and triangle DCE are similar.
You must give reasons for each stage of your working.

(Total for Question 15 is 3 marks)

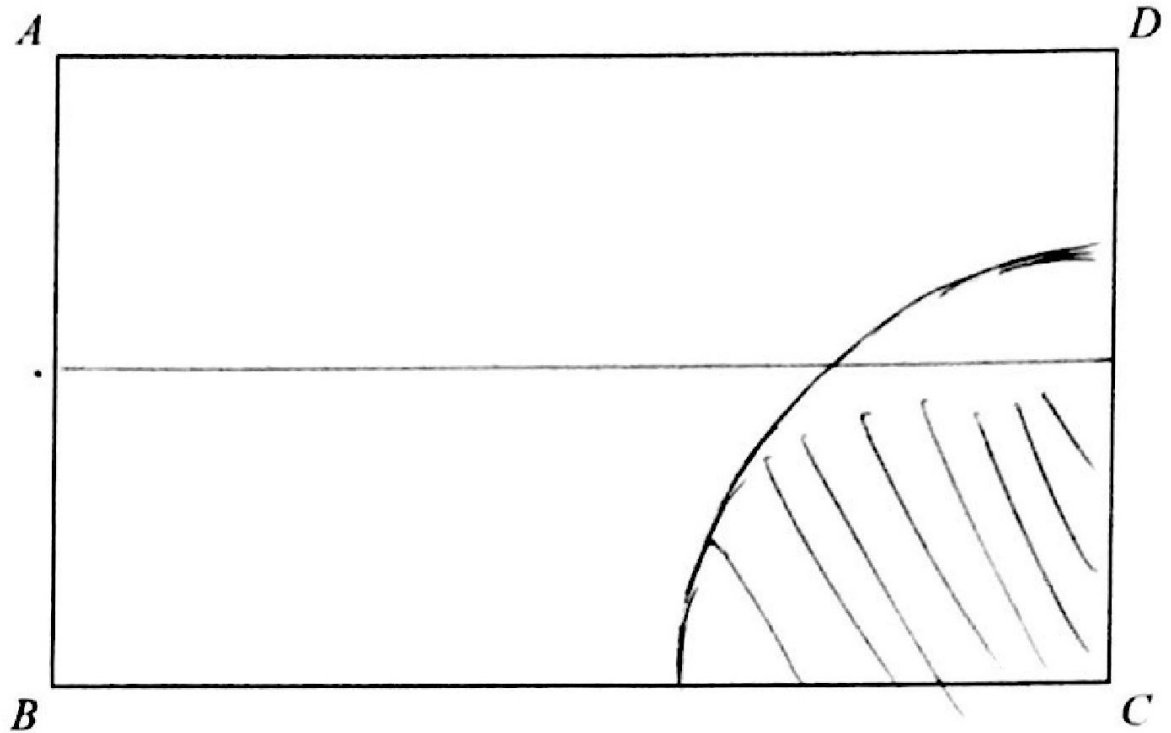
Ext Qn3 (AO3): Only 14% of students got this right(1 marks)

- 20 The equation of a curve is $y = a^x$
A is the point where the curve intersects the y-axis.
(a) State the coordinates of A.

(1)

Answers to Qn 1 (AO2): 38% of students got this right

- 10 Here is a scale drawing of an office.
The scale is 1 cm to 2 metres.

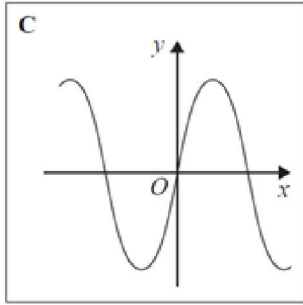
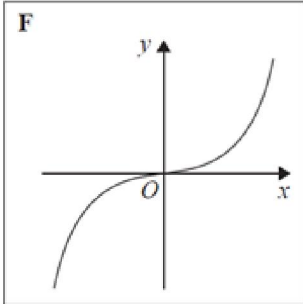
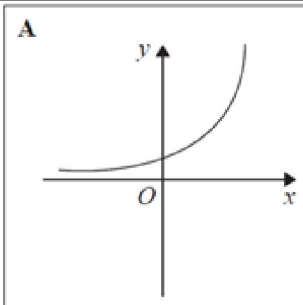
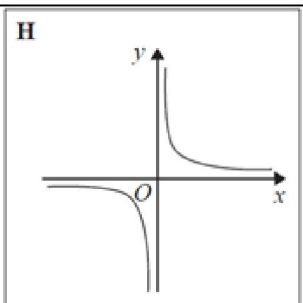
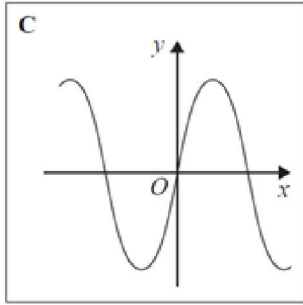
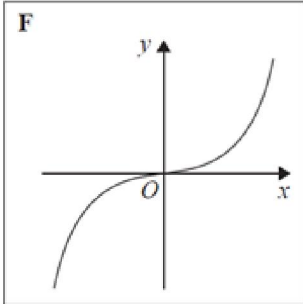
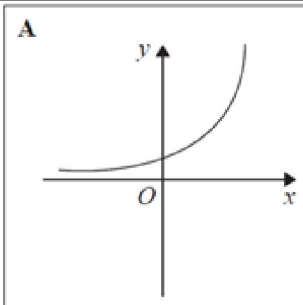
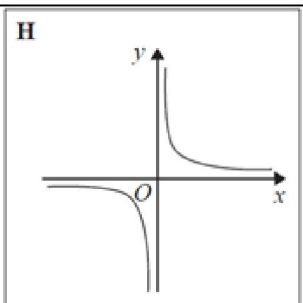
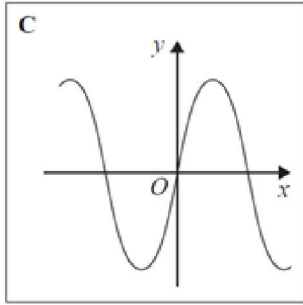
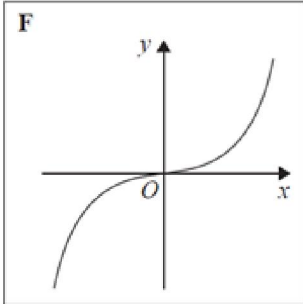
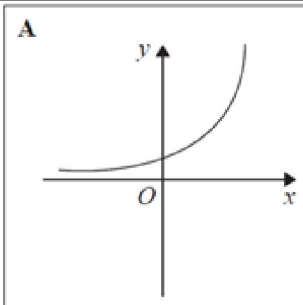
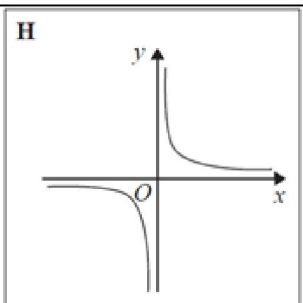


A photocopier is going to be put in the office.
The photocopier has to be closer to B than it is to A .
The photocopier also has to be less than 8 metres from C .

Show, by shading, the region where the photocopier can be put.

Answers to Qn 2 (AO1): 36% of students got this right

Question 14 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes										
	C, F, A, H <table border="1"> <thead> <tr> <th>Equation</th> <th>Graph</th> </tr> </thead> <tbody> <tr> <td>$y = \sin x$</td> <td>  </td> </tr> <tr> <td>$y = x^3 + 4x$</td> <td>  </td> </tr> <tr> <td>$y = 2^x$</td> <td>  </td> </tr> <tr> <td>$y = \frac{4}{x}$</td> <td>  </td> </tr> </tbody> </table>	Equation	Graph	$y = \sin x$		$y = x^3 + 4x$		$y = 2^x$		$y = \frac{4}{x}$		B3	This mark is given for a fully correct table (Two marks are given for two or three correct, one mark is given for one correct)
Equation	Graph												
$y = \sin x$													
$y = x^3 + 4x$													
$y = 2^x$													
$y = \frac{4}{x}$													

Answers to Qn 3 (AO3): 36% of students got this right

Paper 1MA1: 3H			
Question	Working	Answer	Notes
12		431	<p>B1 for use of Pythagoras involving the unknown length</p> <p>P1 for setting up an equation equivalent to $x^2 = 15^2 - 5^2 - 7^2$</p> <p>P1 for finding the volume using their $\sqrt{15^2 - 5^2 - 7^2}$</p> <p>A1awrt 430.5</p>

Answers to Qn 4 (AO1): 36% of students got this right

Question	Working	Answer	Mark	Notes
7		1.03	P1 P1 A1	for process to find the mass of either A or C , e.g. $7 \times 1.42 (= 9.94)$ or $(7 + 125) \times 1.05 (= 138.6)$ (dep) for a complete process to find the density of B , e.g. $(“138.6” - “9.94”) \div 125$ for answer in the range 1.029 to 1.03
<i>Question Order Created by Pinpoint Learnings Automatic Differentiation Algorithmn</i>				

Answers to Qn 5 (AO1): 34% of students got this right

Question	Working	Answer	Mark	Notes
16		67	P1 P1 A1	for process to use proportions, e.g. $\frac{10}{n}$ or $\frac{3}{20}$ for process to form equation, e.g. $\frac{10}{n} = \frac{3}{20}$ cao

Answers to Qn 6 (AO3): 34% of students got this right

21 (a) Factorise $4x^2 - 9$

$$(2x)^2 - (3)^2$$

Difference of two squares $\frac{(2x+3)(2x-3)}{(1)}$

Answers to Qn 7 (AO3): 34% of students got this right

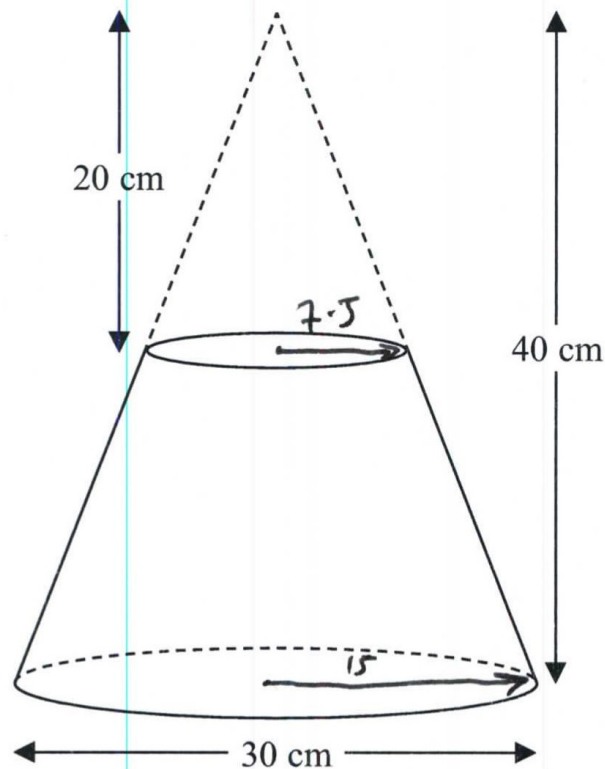
Question	Working	Answer	Mark	Notes
13	$\text{Volume of A} = \frac{140}{0.7}$ $= 200$ $\text{Volume of B} = \frac{128}{1.6} = 80$ $\text{Mass of C} = 140 + 128$ $= 268$ $\text{Density of C} = \frac{268}{280}$	0.957	4	<p>M1 for finding the volume of either liquid A or B or the mass of liquid C</p> <p>M1 for a complete method to find the volume AND mass of liquid C</p> <p>M1 (dep M2) for “total mass” ÷ “total volume”</p> <p>A1 for 0.957 to 0.96</p>

Answers to Qn 8 (AO2): 33% of students got this right

Question		Working	Answer	Mark	Notes
10	(a)		6.66×10^7	M1 A1	for $6.5 \times 10^7 \times 1.006^4$ for 6.66×10^7 or $6.657(\dots) \times 10^7$

Answers to Qn 9 (AO3): 33% of students got this right

22

Diagram **NOT**
accurately drawn

A frustum is made by removing a small cone from a similar large cone.

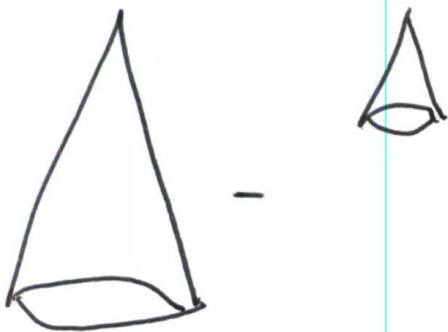
The height of the small cone is 20 cm.

The height of the large cone is 40 cm.

The diameter of the base of the large cone is 30 cm.

Work out the volume of the frustum.

Give your answer correct to 3 significant figures.



$$= \frac{1}{3} \pi \times 15^2 \times 40 - \frac{1}{3} \times \pi \times 7.5^2 \times 20$$

Answers to Qn 10 (AO1): 32% of students got this right

Paper 1MA1: 2H			
Question	Working	Answer	Notes
17		$n^2 - n + 1$ oe	<p>M1 for correct deduction from differences, eg. 2nd</p> <p>M1 difference of 2 implies $1n^2$ or sight of $1^2, 2^2, 3^2, ..$</p> <p>A1 for sight of $1^2, 2^2, 3^2, ..$ linked with 1, 2, 3, ...</p> <p>for $n^2 - n + 1$ oe</p>

Answers to Qn 11 (AO1): 32% of students got this right

Question 5 (Total 4 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
	$180 - \frac{360}{12} = 150$	M1	This mark is given for a complete method to find the interior angle of the dodecagon
	at <i>B</i> or <i>C</i> , $360 - 150 - 90 = 120$	M1	This mark is given for a complete method to find the interior angle of polygon P
	$180 - \frac{360}{x} = 120$, $\frac{360}{x} = 60$, $x = 6$	A1	This mark is given for using the interior and to find out the number of sides of polygon P
	Polygon P has 6 sides, so is a hexagon	C1	This mark is given for a complete solution, fully supported by accurate figures

Answers to Qn 12 (AO1): 31% of students got this right

Paper 1MA1: 2H			
Question	Working	Answer	Notes
13		119	M1 for 1.06×100 oe M1 for $1.06^3 \times 100$ oe A1 accept 119.1016

Answers to Qn 13 (AO3): 30% of students got this right

Paper: 1MA1/2H				
Question	Working	Answer	Mark	Notes
9		65.60	P1	for start in using inverse proportionality, eg $5 \times 4.5 (= 22.5)$ or $4.5 = \frac{k}{5}$ or $5 \times 4.5 \times 60 (= 1350)$ or $\frac{5}{3}$ or $\frac{3}{5}$
			P1	for process to find number of hours for each cleaner today, eg $\frac{22.5}{3} (= 7.5)$
			A1	for 65.6(0) (SC B2 for 61.5(0))

Answers to Qn 14 (AO1): 30% of students got this right

16		Enlargement, scale factor -2 , centre $(4, 6)$	B2 (B1)	Enlargement, scale factor -2 , centre $(4, 6)$ (For 2 correct aspects) NB score B0 for more than one transformation
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Answers to Qn 15 (AO3): 30% of students got this right

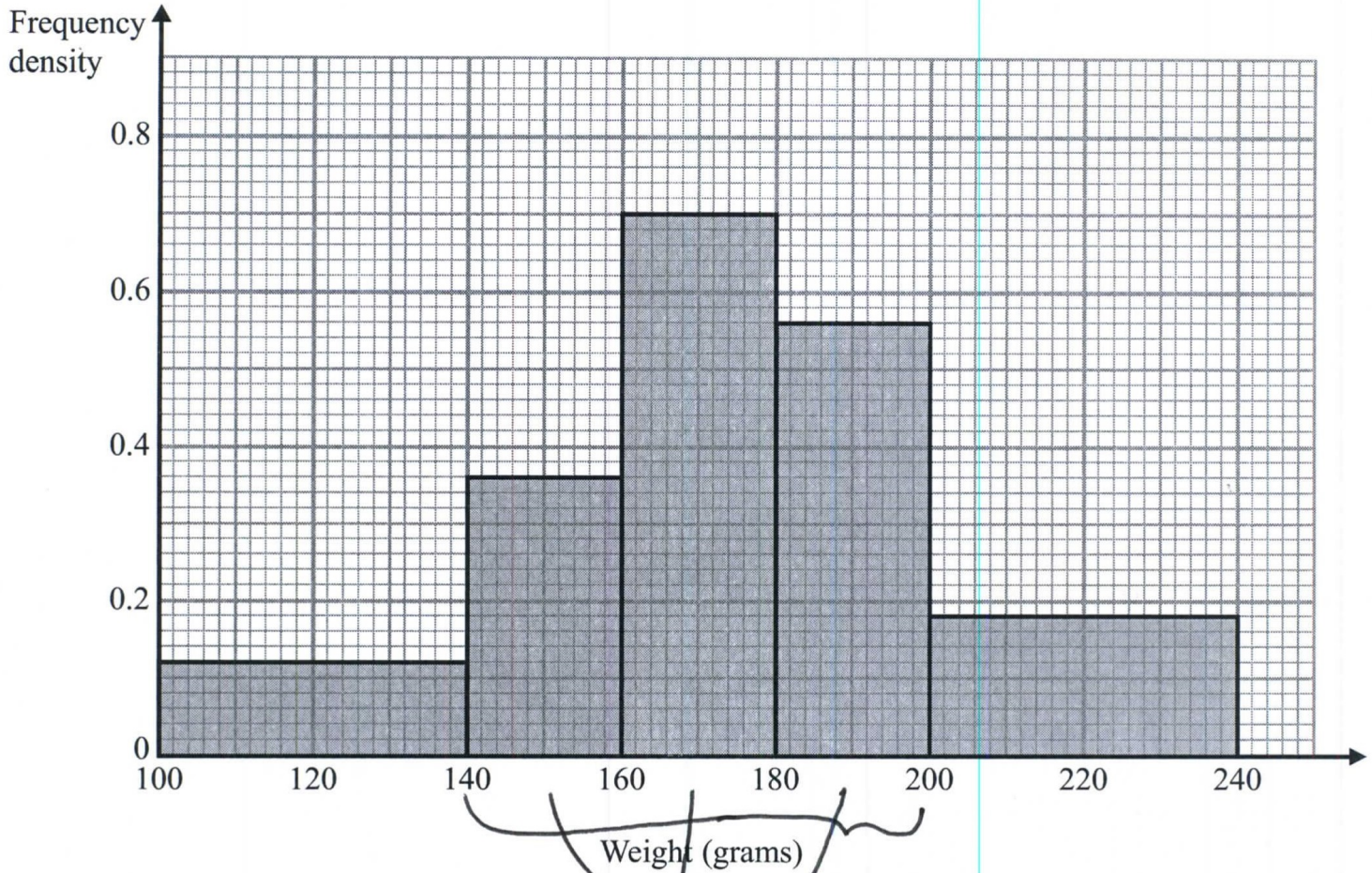
2		39%	<p>P1</p> <p>P1</p> <p>A1</p> <p>OR</p> <p>P1</p> <p>P1</p> <p>A1</p>	<p>Process to find proportion of group that are students , e.g. $\frac{15}{16}$</p> <p>Complete process to find the % of girls , e.g. $\frac{15}{16} \times \frac{5}{12}$</p> <p>for 39(.0625)</p> <p>OR</p> <p>Process to scale up the ratio of teachers : students, so that students can be divided by 7+5 (=12),, e.g. $1 \times 12 : 15 \times 12 = 12 : 180$ or a process to divide the "180" in the ratio 7:5,, e.g. $180 \div 12 \times 7 (=105)$ and $180 \div 12 \times 5 (=75)$</p> <p>Complete process to find the % of girls , e.g. $(75 \div (12 + 105 + 75)) \times 100$</p> <p>for 39(.0625)</p>
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Answers to Qn 16 (AO3): 30% of students got this right

Paper: 1MA1/2H				
Question	Working	Answer	Mark	Notes
13 (b)		4.5	P1	for a process to find multiplier for 6 year period, eg $325 \div 250$ oe (= 1.3) or 130(%) or for $250000 \times y^6 = 325000$
			P1	for a process to find multiplier for one year, eg ("1.3") ^{$\frac{1}{6}$} or 1.044... or 1.045
			A1	4.4 – 4.5

Answers to Qn 17 (AO3): 27% of students got this right

21 The histogram shows some information about the weights of a sample of apples.



Work out the proportion of apples in the sample with a weight between 140 grams and 200 grams.

$$Fr = FD \times CW$$

$$20 \times 0.26 + 20 \times 0.7 + 20 \times 0.56$$

$$40 \times 0.12 + 20 \times 0.26 + 20 \times 0.7 + 20 \times 0.56 + 40 \times 0.18$$

$$= \frac{32.4}{44.4} = \underline{\underline{0.73}}$$

or
count the big squares

$$30 \times 25 + 30 \times 1 + 30 \times 1 = 810$$

$$\frac{810}{810 + 300} = 0.73$$

Answers to Qn 18 (AO3): 25% of students got this right

Question 16 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	Let $y = 0.\dot{2}$. $10y = 2.\dot{2}$; $9y = 2$, thus $y = \frac{2}{9}$	M1	This mark is given for a method to convert $0.\dot{2}$ to a fraction
	Let $x = 0.1\dot{3}\dot{6}$ $10x = 1.3636\dots$ $1000x = 136.3636$ $990x = 135$, thus $x = \frac{135}{990}$	M1	This mark is given for a method to convert $0.13636\dots$ to a fraction
	$\frac{2}{9} \times \frac{135}{990} = \frac{270}{8910} = \frac{1}{33}$	C1	This mark is given for a correct arithmetic and concluding the proof

Answers to Qn 19 (AO1): 25% of students got this right

20 In a sale normal prices are reduced by 20%.

A washing machine has a sale price of £464

By how much money is the normal price of the washing machine reduced?

$$\begin{aligned} \div 8 \quad 80\% &= £464 \\ 10\% &= £58 \\ 100\% &= \underline{\underline{£580}} \end{aligned}$$

$$\begin{array}{r} £580 \\ - 464 \\ \hline 116 \end{array}$$

Reduced by £116

£ ~~580~~

OR $0.8A = £464$

(Total for Question 20 is 3 marks)

$$A = \frac{464}{0.8} = 580$$

Answers to Qn 20 (AO3): 24% of students got this right

Question	Working	Answer	Mark	Notes
11		4 : 10 : 21 : 7	<p>P1</p> <p>P1</p> <p>A1</p>	<p>for process of using “twice”, e.g. $\frac{3}{4}$ $\times 2x$ or $\frac{1}{4} \times 2x$ or $(2 + 5) \times 2$</p> <p>for combining ratios e.g. $\frac{2}{7}x : \frac{5}{7}x :$ $\frac{3}{4} \times 2x : \frac{1}{4} \times 2x$ or correct but unsimplified ratio leading to given ratio</p> <p>cao</p>

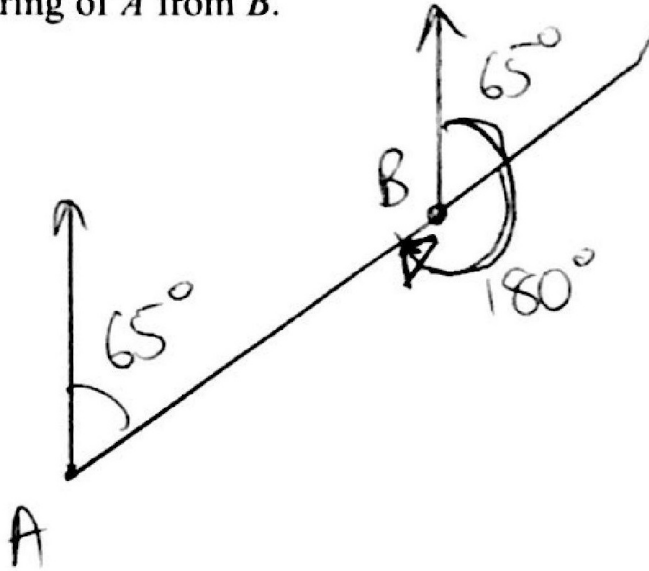
Answers to Qn 21 (AO2): 24% of students got this right

13 Martin and Janet are in an orienteering race.

Martin runs from checkpoint A to checkpoint B , on a bearing of 065°

Janet is going to run from checkpoint B to checkpoint A .

Work out the bearing of A from B .



245

Answers to Qn 22 (AO3): 24% of students got this right

$$*24 \quad m = \frac{\sqrt{s}}{t}$$

$s = 3.47$ correct to 2 decimal places

$t = 8.132$ correct to 3 decimal places

By considering bounds, work out the value of m to a suitable degree of accuracy.

You must show all your working and give a reason for your final answer.

$$s \begin{cases} \nearrow 3.475 \\ \searrow 3.465 \end{cases}$$

$$t \begin{cases} \nearrow 8.1325 \\ \searrow 8.1315 \end{cases}$$

Upper bound

$$m = \frac{\sqrt{3.475}}{8.1315} = 0.2292$$

Lower bound

$$m = \frac{\sqrt{3.465}}{8.1325} = 0.2288$$

Answer = 0.229 as this is what
the LB and UB round to with 3dp.

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

8	(a)		$\frac{1}{3}$	P1	for a process to find volume of cylinder, e.g. $\pi r^2 \times 6r$
	(b)		Statement	C1	for complete process, e.g. volume of 3 spheres divided by the volume of the cylinder, e.g. $(3 \times \frac{4}{3}\pi r^3) \div \pi r^2 \times 6r$ or $\frac{2}{3}$ $\frac{1}{3}$ oe e.g. Proportion between number of spheres and relevant height cylinder remains constant

Answers to Qn 24 (AO1): 22% of students got this right

20 Solve $3x^2 - 5x - 1 = 0$

Give your solutions correct to 3 significant figures.

$$a = 3 \quad b = -5 \quad c = -1$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$= \frac{-(-5) \pm \sqrt{(-5)^2 - 4(3)(-1)}}{2(3)}$$

$$\underline{\underline{x = 1.85}}$$

$$\underline{\underline{x = -0.180}}$$

Answers to Qn 25 (AO3): 22% of students got this right

Part	Working or answer an examiner might expect to see	Mark	Notes
9 (b)	$79.20 \div 0.6 = 132$	1	This mark is given for finding the amount of interest before tax is deducted
	$(132 \div 5500) \times 100$	1	This mark is given for a method to find R
	2.4	1	This mark is given for the correct answer only

Answers to Qn 26 (AO3): 19% of students got this right

Paper: 1MA1/2H				
Question	Working	Answer	Mark	Notes
11		0.119	P1	for starting the process, eg finds area 25π or 16π or e, or finds angle for town A, 0 – 19 (70°), may be on diagram
			P1	for a complete process, eg $\frac{70}{360} \times \frac{25\pi}{41\pi}$
			A1	0.118 – 0.119 or 11.8% - 11.9%

Answers to Qn 27 (AO2): 18% of students got this right

18 (a)		68	M1	for working with frequency density or using squares
			M1	for finding at least 4 of 10, 8, 12, 15, 15, 8
			A1	cao
(b)(i)		412–417	M1	For a complete correct method to divide the area of the histogram into two equal parts OR for a complete correct method to interpolate for the 34.5 th value
			A1	Answer within the range 412–417
(ii)		Statement	C1	e.g. Only an estimation dependent on distribution within the interval

Ext ANSWERS 1 (AO2): Only 15% of students got this right(4 mark

17		No with justification	<p>P1</p> <p>P1</p> <p>p1</p> <p>C1</p>	<p>for one correct bound, e.g. 69.5, 70.5, 39.5, 40.5, 121.5, 122.5, 13.5, 14.5</p> <p>for complete process to find the upper bound for the volume of the tank, e.g. $120.5 \times 40.5 \times 70.5 (= 344057.625)$</p> <p>for complete process to find the upper bound for the number of buckets, (upper bound for volume of tank \div lower bound for volume of bucket) e.g. “344057.625” \div 13500. Must be in consistent units</p> <p>OR correct process to compare the lower bound for 25 buckets of water with the upper bound for the volume of the tank, e.g. $13.5 \times 1000 \times 25 (=337500)$</p> <p>Correct conclusion based on correct calculations</p>
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Ext ANSWERS 2 (AO1): Only 14% of students got this right(3 mark

Question 15 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	(angle) $BAE = (\text{angle}) CDE$ <u>angles</u> in the same <u>segment</u> are equal or <u>angles</u> at the circumference <u>subtended</u> on the same <u>arc</u> are equal	C1	This mark is given for identifying one pair of equal angles with a correct reason
	(angle) $AEB = (\text{angle}) DEC$ <u>opposite angles</u> or <u>vertically opposite</u> angles are equal	C1	This mark is given for identifying a second pair of equal angles with a correct reason
	Thus the two triangles have three pairs of equal angles and so are similar	C1	This mark is given for a correct conclusion with supporting reasons

Ext ANSWERS 3 (AO3): Only 14% of students got this right(1 mark

Question 20 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	The curve cuts the y axis at $x = 0$ $y = a^x = a^0 = 1$ (0, 1)	B1	This mark is given for the correct answer only