PINPOINT LEARNING

PAPER THREE REVISION PACKS

63_to_83_Percent_Pinpoint_AI_Pack

Time Allocation = 76mins , Max = 67 Marks

Calculated Grade Boundaries:

Grade	Marks
3+	14
4-	27
4	41
4+	54
5-	67

Question 1 (AO1): 37% of students got this right (1 marks)

23 Use your calculator to work out $\sqrt{\dfrac{\sin 25^\circ + \sin 40^\circ}{\cos 25^\circ - \cos 40^\circ}}$

Write down all the figures on your calculator display.

(*b*) Write your answer to part (*a*) correct to 2 decimal places.

Question 2 (AO1): 37% of students got this right (3 marks)

8 Sharon asked each of her friends to name their favourite Olympic sport.

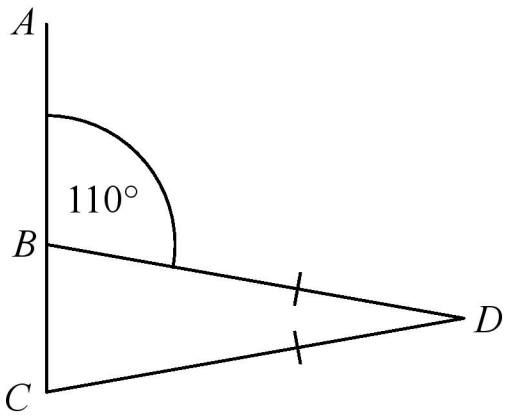
The table below shows information about their answers.

Sport	Frequency
athletics	13
cycling	17
swimming	8
gymnastics	7

Draw an accurate pie chart opposite for this information.

Question 3 (AO1): 34% of students got this right (4 marks)

15



ABC is a straight line.
$BD = CD$
Angle $ABD = 110°$

Show that angle $BDC = 40°$

Give a reason for each stage of your working.

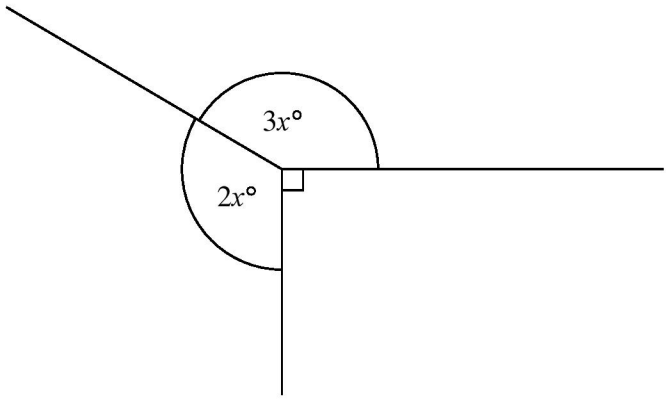
Question 4 (AO1): 33% of students got this right (2 marks)

9 Becky invests £5000 for 2 years in a bank account.
She gets simple interest at a rate of 3% per year.

Work out the total amount of interest Becky gets by the end of 2 years.

Question 5 (AO1): 31% of students got this right (3 marks)

9



Find the value of x.

.....

(Total for Question 9 is 3 marks)

Question 6 (AO1): 30% of students got this right (1 marks)

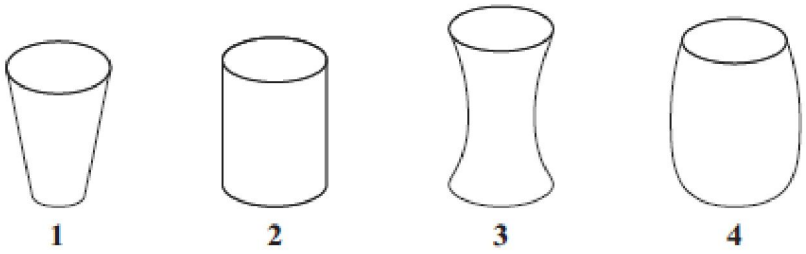
16 The table shows information about the number of children in each of 40 families.

Number of children	Frequency
0	6
1	13
2	12
3	7
4	2
5 or more	0

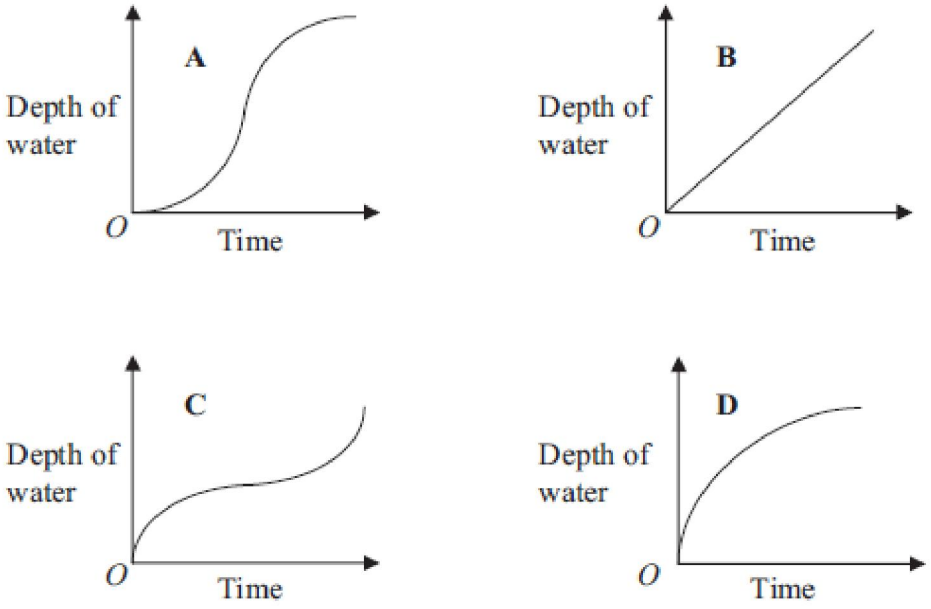
(*a*) Find the median number of children.

Question 7 (AO2): 30% of students got this right (2 marks)

20. Here are four containers.
Water is poured into each container at a constant rate.



Here are four graphs.
The graphs show how the depth of the water in each container changes with time.



Match each graph with the correct container.

A and .....

B and .....

C and .....

D and .....

(Total 2 marks)

Question 8 (AO3): 29% of students got this right (1 marks)

15b The nth term of a number sequence is $n^3 + 3$

346 is a term of this sequence.

(b) Which term?

.....

(1)

Question 9 (AO1): 29% of students got this right (2 marks)

10 Jim thinks of a number.

$\frac{2}{3}$ of Jim's number is 48.

Work out of $\frac{5}{6}$ Jim's number.

Question 10 (AO1): 29% of students got this right (2 marks)

17

expression	equation	formula	identity
inequality	term	factor	multiple

(*b*) Choose two words from the box above to make this statement correct.

$5y$ is a ..... in the ..... $3x + 5y$

Question 11 (AO2): 28% of students got this right (2 marks)

11 Robyn is describing a shape to her friend Lily.

Robyn says,

"The shape has four sides.
It only has one pair of parallel sides."

(a) What shape is Robyn describing?

.....

(1)

Lily then describes a shape.

Lily says,

"The shape has four sides.
It has two pairs of equal opposite sides.
The opposite sides are parallel."

Robyn says there are two possible shapes.

(b) Is she correct?
Explain your answer.

.....

.....

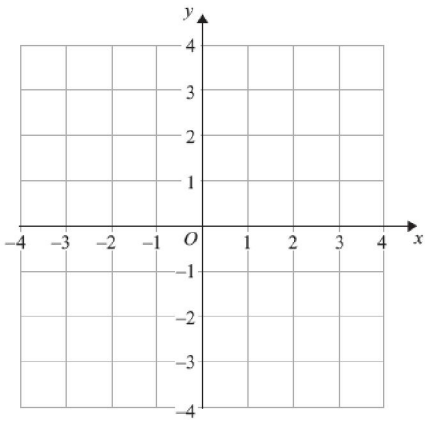
.....

(1)

(Total for Question 11 is 2 marks)

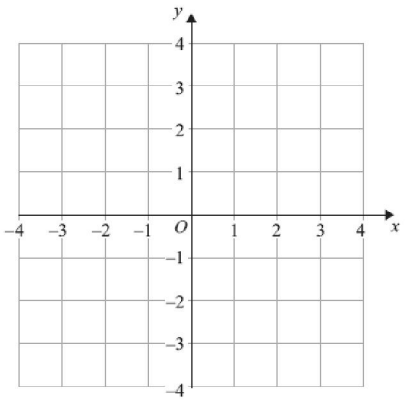
Question 12 (AO1): 28% of students got this right (4 marks)

16.



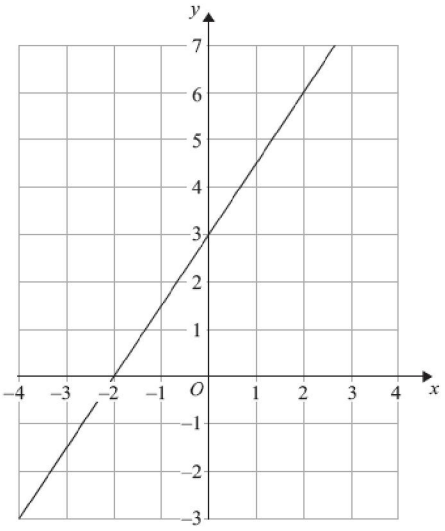
(a) On the grid above, draw the line $x = 3$

(1)



(b) On this grid, draw the line $y = x$

(1)



(c) Find the gradient of the straight line drawn on this grid.

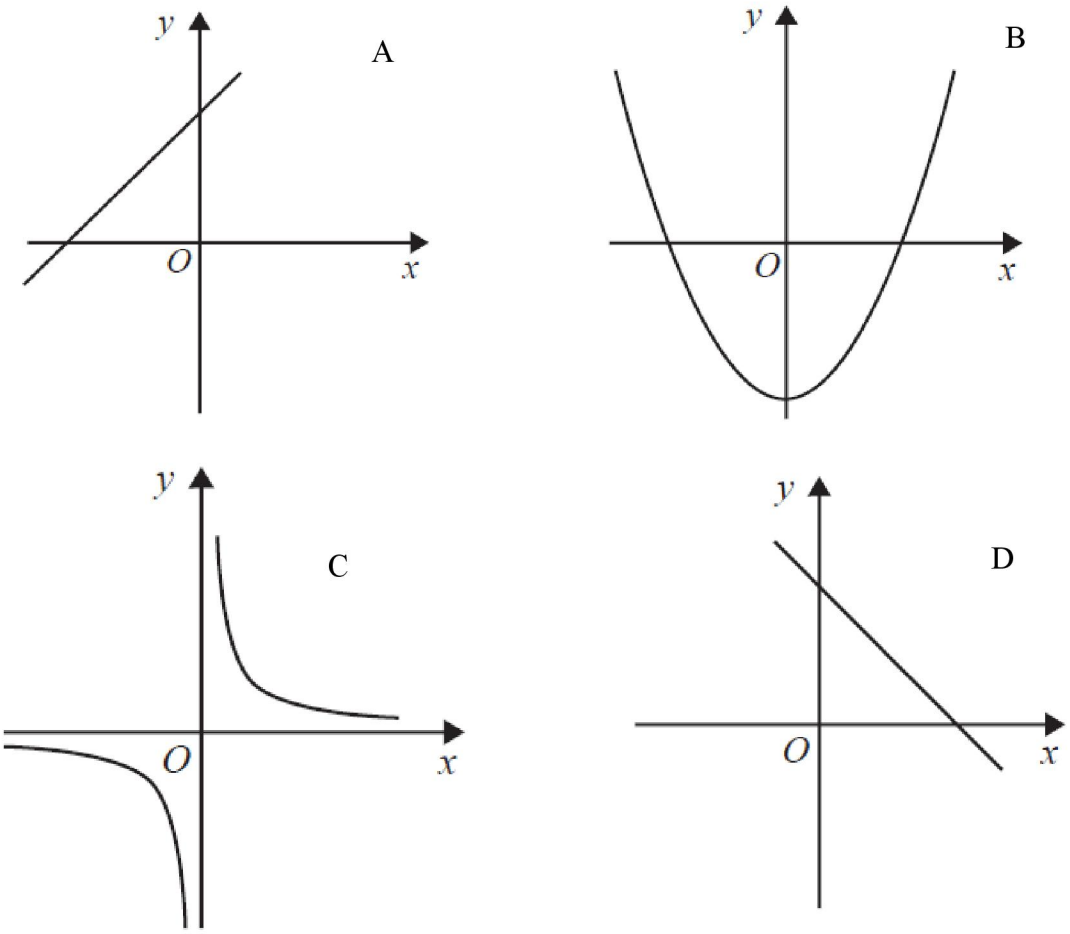
.....

(2)

(Total 4 marks)

Question 13 (AO2): 27% of students got this right (2 marks)

27 Here are four graphs.



Each of the equations in the table is the equation of one of the graphs opposite.

Complete the table.

Equation	Letter of graph
$y = x^2 - 7$	
$y = 3 - 2x$	
$y = 2x + 3$	
$y = \frac{1}{x}$	

Question 14 (AO1): 27% of students got this right (3 marks)

13 Abi invests £500 for 4 years in a bank account.
The account pays simple interest at a rate of 2.3% per year.

Work out the total amount of interest Abi has got at the end of 4 years.

Question 15 (AO1): 25% of students got this right (1 marks)

2 Write 56.78 correct to one significant figure.

.....

(Total for Question 2 is 1 mark)

Question 16 (AO3): 25% of students got this right (3 marks)

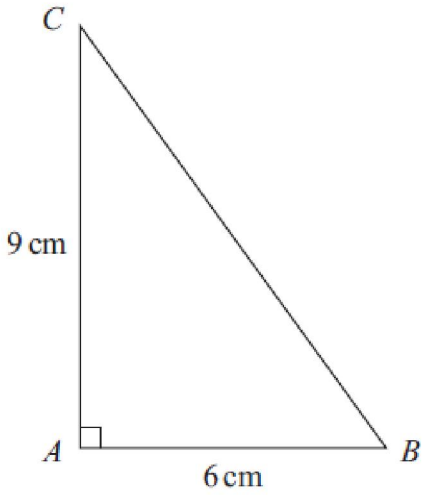
17 Emily buys a pack of 12 bottles of water.
The pack costs £5.64

Emily sells all 12 bottles for 50p each.

Work out Emily's percentage profit.
Give your answer correct to 1 decimal place.

Question 17 (AO1): 25% of students got this right (3 marks)

20.



ABC is a right-angled triangle.

$AB = 6$ cm.
$AC = 9$ cm.

Work out the length of BC.
Give your answer correct to 3 significant figures.

Question 18 (AO1): 25% of students got this right (3 marks)

16 Solve $5x - 6 = 3(x - 1)$

Question 19 (AO3): 23% of students got this right (5 marks)

19. Ann has some cards.

Beth has 4 cards more than Ann.
Cath has three times as many cards as Beth.
The total number of cards is 51

How many cards does each of the three people have?
You must show all your working.

(Total 5 marks)

Question 20 (AO1): 21% of students got this right (1 marks)

24 (c) Factorise $x^2 + 6x + 9$

Question 21 (AO2): 19% of students got this right (3 marks)

13 Here is part of an advert for a driving school.

> 7 out of 10 of the people we teach
> pass the driving test first time

Ali talked to 63 people who had been taught to drive by the driving school.
42 of these people passed the driving test first time.

Does this support what is said in the advert?
You must show how you get your answer.

.....

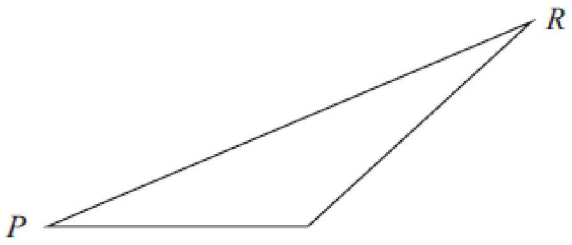
(Total for Question 13 is 3 marks)

Question 22 (AO1): 19% of students got this right (2 marks)

24 (*a*) Solve $2x^2 = 72$

Question 23 (AO3): 19% of students got this right (5 marks)

14. Here is a scale drawing of a field.



Scale: 1 cm represents 3 m.

Harry is going to plant some bushes on the side *PR*.
He is going to plant the first bush at *P*.

The bushes will be 2 m apart.
The cost of each bush is £11.99

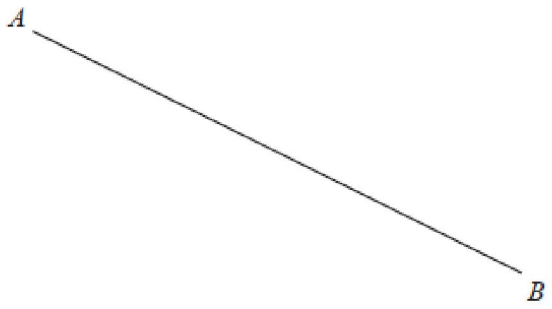
Work out the total cost of the bushes on the side *PR*.

£.....

(Total 5 marks)

Question 24 (AO1): 19% of students got this right (2 marks)

24. In the space below, use ruler and compasses to construct the perpendicular bisector of line AB.



(Total for Question 24 is 2 marks)

Question 25 (AO2): 18% of students got this right (5 marks)

20. Henry is thinking about having a water meter.

These are the two ways he can pay for the water he uses.

Water Meter	**No Water Meter**
A charge of £28.20 per year **plus** 91.22p for every cubic metre of water used **1 cubic metre = 1000 litres**	A charge of £107 per year

Henry uses an average of 180 litres of water each day.

Henry wants to pay as little as possible for the water he uses.
Should Henry have a water meter?

(Total 5 marks)

Question 26 (AO1): 17% of students got this right (2 marks)

24 (*b*) Expand and simplify $(2x + 1)(3x - 2)$

Ext Qn1 (AO1): Only 14% of students got this right(3 marks)

23 (a) Expand and simplify $(x + 6)(x - 3)$

[2 marks]

23 (b) Solve $(x - 7)(x + 9) = 0$

[1 mark]

Ext Qn2 (AO1): Only 13% of students got this right(2 marks)

26 Factorise $x^2 + 3x - 4$

Ext Qn3 (AO1): Only 13% of students got this right(2 marks)

25 Toby invested £7500 for 2 years in a savings account.
He was paid 4% per annum compound interest.

How much money did Toby have in his savings account at the end of 2 years?

Answers to Qn 1 (AO1): 37% of students got this right

Part	Working or answer an examiner might expect to see	Mark	Notes
23 (b)	2.76	1	This mark is given for the correct answer only

Answers to Qn 2 (AO1): 37% of students got this right

Question	Working	Answer	Mark	Notes
8	Ath = $\frac{13}{45} \times 360 = 104°$ Cyc = $\frac{17}{45} \times 360 = 136°$ Swi = $\frac{8}{45} \times 360 = 64°$ Gym = $\frac{7}{45} \times 360 = 56°$	Correct pie chart	M1	a method shown to calculate one angle, e.g. $\frac{13}{45} \times 360$ **or** $\frac{17}{45} \times 360$ **or** $\frac{8}{45} \times 360$ **or** $\frac{7}{45} \times 360$ **or** 1 correct angle drawn out of 4 sectors
			A1	All angles drawn correctly ±2°
			B1	Sectors labelled with sport (dependent on at least 2 angles drawn correctly and exactly 4 sectors)

Answers to Qn 3 (AO1): 34% of students got this right

Question	Working	Answer	Mark	Notes
15		Shown, with reasons	M1	for method to find angle *CBD*, 180 – 110 (= 70)
			M1	for full method e.g. 180 – 70 – 70 (= 40)
			C1	for one appropriate reason
			C1	for complete set of appropriate reasons and *BDC* shown as 40 eg Angles on a straight line add up to 180 Base angles of an isosceles triangle are equal. Angles in a triangle add up to 180

Answers to Qn 4 (AO1): 33% of students got this right

Question	Working	Answer	Mark	Notes
9		300	M1	for method to calculate 3% or 6%, e.g. $\frac{3}{100} \times 5000$ or 5300 or 4700 as answer
			A1	cao

Answers to Qn 5 (AO1): 31% of students got this right

Question 9 (Total 3 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
	$90 + 2x + 3x = 360$	M1	This mark is given for a method to form an equation
	$2x + 3x = 360 - 90$ $5x = 270$	M1	This mark is given for a method to solve the equation formed
	54	A1	This mark is given for the correct answer only

Answers to Qn 6 (AO1): 30% of students got this right

Question	Working	Answer	Mark	Notes
16 (a)		2	B1	cao

Answers to Qn 7 (AO2): 30% of students got this right

Question	Working	Answer	Mark	Notes
20		A and 3 B and 2 C and 4 D and 1	2	B2 for all 4 correct (B1 for 2 correct)

Answers to Qn 8 (AO3): 29% of students got this right

15b The nth term of a number sequence is $n^3 + 3$

346 is a term of this sequence.

(b) Which term?

$n^3 + 3 = 346$

$n^3 = 343$

$n = \sqrt[3]{343}$

$n = 7$ 346 is the 7th term

Answers to Qn 9 (AO1): 29% of students got this right

Part	Working or answer an examiner might expect to see	Mark	Notes
10	$\frac{3}{2} \times 48 = 72$	1	This mark is given for a method to fins Jim's number
	$\frac{5}{6} \times 72 = 60$	1	This mark is given for the correct answer only

Answers to Qn 10 (AO1): 29% of students got this right

Part	Working an or answer examiner might expect to see	Mark	Notes
17 (b)	term	1	This mark is given for the correct answer only
	expression	1	This mark is given for the correct answer only

Answers to Qn 11 (AO2): 28% of students got this right

11(a) (b)		Trapezium Explanation	B1 C1	 Explanation, e.g, yes, and could be either rectangle or parallelogram **or** no, and could be rectangle, parallelogram, square or rhombus

Answers to Qn 12 (AO1): 28% of students got this right

Question		Working	Answer	Mark	Notes
16.	(a)		$x = 3$ drawn	1	B1 for $x = 3$ drawn [Note: each line drawn must be a single line segment satisfying $x = 3$]
	(b)		$y = x$ drawn	1	B1 for $y = x$ drawn [Note: each line drawn must be a single line segment satisfying $y = x$]
	(c)	Gradient = $\frac{3-0}{0--2}$	1.5	2	M1 for a method to find the gradient of the given line A1 for 1.5 oe

Answers to Qn 13 (AO2): 27% of students got this right

Question	Working	Answer	Mark	Notes
27		B D A C	B2 (B1)	for all four correctly matched (for 2 correctly matched)

Answers to Qn 14 (AO1): 27% of students got this right

Paper 1MA1: 2F			
Question	**Working**	**Answer**	**Notes**
13		46	M1 for process to find value after 1 year M1 for process to find value after 4 years A1 cao

Answers to Qn 15 (AO1): 25% of students got this right

Question 2 (Total 1 mark)

Part	Working an or answer examiner might expect to see	Mark	Notes
	60	B1	This mark is given for the correct answer only

Answers to Qn 16 (AO3): 25% of students got this right

Part	Working or answer an examiner might expect to see	Mark	Notes
17	$5.64 \div 12 = 0.47$	1	This mark is given for finding the cost of one bottle
	$50 - 47 = 3$	1	This mark is given for finding the profit on the sale of one bottle
	$\frac{3}{47} \times 100 = 6.4$ (to one decimal place)	1	This mark is given for the correct answer only

Answers to Qn 17 (AO1): 25% of students got this right

Question		Working	Answer	Mark	Notes
20		$6^2 + 9^2 = 117$ $\sqrt{117}$ =	10.8	3	M1 for $6^2 + 9^2$ M1 for $\sqrt{36+81}$ or $\sqrt{117}$ A1 for 10.8 – 10.82

Answers to Qn 18 (AO1): 25% of students got this right

Part	Working or answer an examiner might expect to see	Mark	Notes
16	$5x - 6 = 3x - 3$	1	This mark is given for expanding brackets
	$5x - 6 - 3x = -3$ $2x - 6 = -3$	1	This mark is given for isolating x on one side of the equation
	$2x = 3$ $x = 1\frac{1}{2}$	1	This mark is given for the correct answer only

Answers to Qn 19 (AO3): 23% of students got this right

Question		Working	Answer	Mark	Notes
19		$x + x + 4 + 3(x + 4) = 51$ $2x + 4 + 3x + 12 = 51$ $5x + 16 = 51$ $5x = 35$ $5x = 35 \div 5$	Ann 7 Beth 11 Cath 33	5	M1 for $x + 4$ or $3(x + 4)$ oe seen M1 for x + '$x + 4$' + '$3(x + 4)$' M1 x + '$x + 4$' + '$3(x + 4)$' = 51 A1 for 7 or 11 or 33 C1 for Ann 7, Beth 11, and Cath 33 oe **OR** M1 for using a value for n, eg $n + 4$ or $4 \times n$ M1 for attempting a trial using n, $n + 4$ and $3(n + 4)$ M1 for at least 2 trials with correct totals for 'n' A1 for 11 or 33 C1 for Ann 7, Beth 11, and Cath 33 oe

Answers to Qn 20 (AO1): 21% of students got this right

Part	Working or answer an examiner might expect to see	Mark	Notes
24 (c)	$(x + 3)^2$ or $(x + 3)(x + 3)$	1	This mark is given for the correct answer only

Answers to Qn 21 (AO2): 19% of students got this right

13 Here is part of an advert for a driving school.

> 7 out of 10 of the people we teach
> pass the driving test first time

Ali talked to 63 people who had been taught to drive by the driving school.
42 of these people passed the driving test first time.

Does this support what is said in the advert?
You must show how you get your answer.

$63 \times 0.7 = 44.1$
42 is less than the advertised 44.1

No, the advert is not supported.

Answers to Qn 22 (AO1): 19% of students got this right

Part	Working or answer an examiner might expect to see	Mark	Notes
24 (a)	$2x^2 = 72,\ x^2 = 36$ $x = \sqrt{36}$ +6, –6	2	These marks are given for a pair of solutions (One mark is given for either +6 or –6)

Answers to Qn 23 (AO3): 19% of students got this right

Question		Working	Answer	Mark	Notes
14.			131.89	5	B2 for $PR = 21$ m ($\pm$ 0.6 m) or at least 3 bushes 0.5 to 0.9 cm apart on PR (B1 for PR = 7cm ($\pm$ 0.2 cm) or at least 3 bushes 1.8 to 2.2 cm apart on PR) M1 "21" $\div$ 2 or for indication of 10 or 11 bushes (may be on diagram) M1 (dep on 2 marks earned previously) for '11' $\times$ 11.99 A1 cao

Answers to Qn 24 (AO1): 19% of students got this right

24		construction	B2 (B1)	Correct construction showing all necessary arcs. (Pair of intersecting arcs centred on A and B)

Answers to Qn 25 (AO2): 18% of students got this right

<table>
<tr><th colspan="2">Question</th><th>Working</th><th>Answer</th><th>Mark</th><th>Notes</th></tr>
<tr><td>20.</td><td></td><td>180 × 365 = 65700

65700 ÷ 1000 = 65.7

65.7 × 91.22 = 5993.154

5993.154 ÷ 100 + 28.20

= 88.13..

<table>
<tr><td>D</td><td>U</td><td>C</td><td>T</td></tr>
<tr><td>366</td><td>65880</td><td>6010</td><td>88.30</td></tr>
<tr><td>365</td><td>65700</td><td>5993</td><td>88.13</td></tr>
<tr><td></td><td>65000</td><td>5929</td><td>87.49</td></tr>
<tr><td></td><td>66000</td><td>6020</td><td>88.40</td></tr>
<tr><td>364</td><td>65520</td><td>5976</td><td>87.96</td></tr>
<tr><td>360</td><td>64800</td><td>5911</td><td>87.31</td></tr>
<tr><td><s>336</s></td><td><s>60480</s></td><td>5517</td><td>83.37</td></tr>
</table></td><td>Decision (Should have a water meter installed)</td><td>5</td><td>Per year

M1 for 180 × ‘365’ (= 65700)

M1 for “65700”÷1000 (= 65.7 or 65 or 66)

M1 for “65.7” × 91.22 (=5 993.....)

A1 for answer in range (£)87 – (£)89

C1(dep on at least M1) for conclusion following from working seen

OR (per day)

M1 for 107 ÷ ‘365’ (= 0.293…)

M1 for 180 ÷ 1000 × 91.22 (= 16.4196)

M1 for 28.2 ÷ ‘365’ + ‘0.164196’ (units must be consistent)

A1 for 29 – 30(p) and 24– 24.3(p) oe

C1(dep on at least M1) for conclusion following from working seen</td></tr>
</table>

Answers to Qn 26 (AO1): 17% of students got this right

Part	Working or answer an examiner might expect to see	Mark	Notes
24 (b)	$6x^2 - 4x + 3x - 2$	1	This mark is give for at least three correct terms
	$6x^2 - x - 2$	1	This mark is given for the correct answer only

Ext ANSWERS 1 (AO1): Only 14% of students got this right(3 mark

23 (a) Expand and simplify $(x + 6)(x - 3)$ **[2 marks]**

$x^2 - 3x + 6x - 20$

Answer $x^2 + 3x - 18$

23 (b) Solve $(x - 7)(x + 9) = 0$ **[1 mark]**

Answer 7 and –9

Ext ANSWERS 2 (AO1): Only 13% of students got this right(2 mark

Paper 1MA1: 3F			
Question	**Working**	**Answer**	**Notes**
26		$(x-1)(x+4)$	M1 $(x \pm 1)(x \pm 4)$ A1 $(x-1)(x+4)$ oe

Ext ANSWERS 3 (AO1): Only 13% of students got this right(2 mark

Paper 1MA1: 2F			
Question	**Working**	**Answer**	**Notes**
25		8112	M1 for complete method, eg. 7500×1.04^2 A1 cao