

PINPOINT LEARNING

PAPER THREE REVISION PACKS

74_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 (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 2 (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 3 (AO1): 25% of students got this right (3 marks)

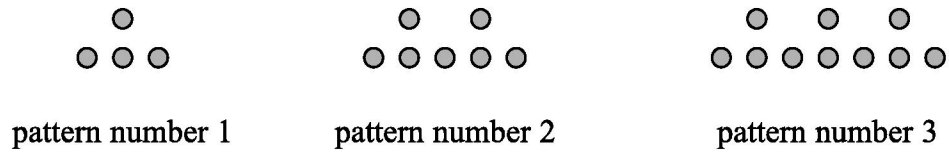
16 Solve $5x - 6 = 3(x - 1)$

Question 4 (AO1): 21% of students got this right (1 marks)

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

Question 5 (AO1): 21% of students got this right (4 marks)

18 Here is a sequence of patterns made with counters.



(a) Find an expression, in terms of n , for the number of counters in pattern number n .

Bayo has 90 counters.

(b) Can Bayo make a pattern in this sequence using all 90 of his counters?
You must show how you get your answer.

Question 6 (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 7 (AO1): 19% of students got this right (2 marks)

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

Question 8 (AO1): 17% of students got this right (2 marks)

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

Question 9 (AO1): 17% of students got this right (2 marks)

- 22 The price of all rail tickets increased by 7.5 %.
The price of a rail ticket from London to Ipswich increased by £3.75

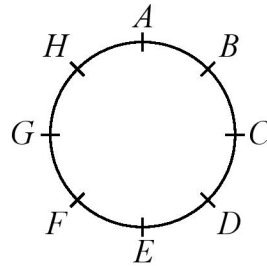
Work out the price of the ticket before the increase.

.....

(Total for Question 22 is 2 marks)

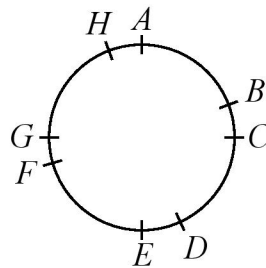
Question 10 (AO2): 17% of students got this right (1 marks)

- 18 Hasmeet walks once round a circle with diameter 80 metres.



There are 8 points equally spaced on the circumference of the circle.

Four of the points are moved, as shown in the diagram below.

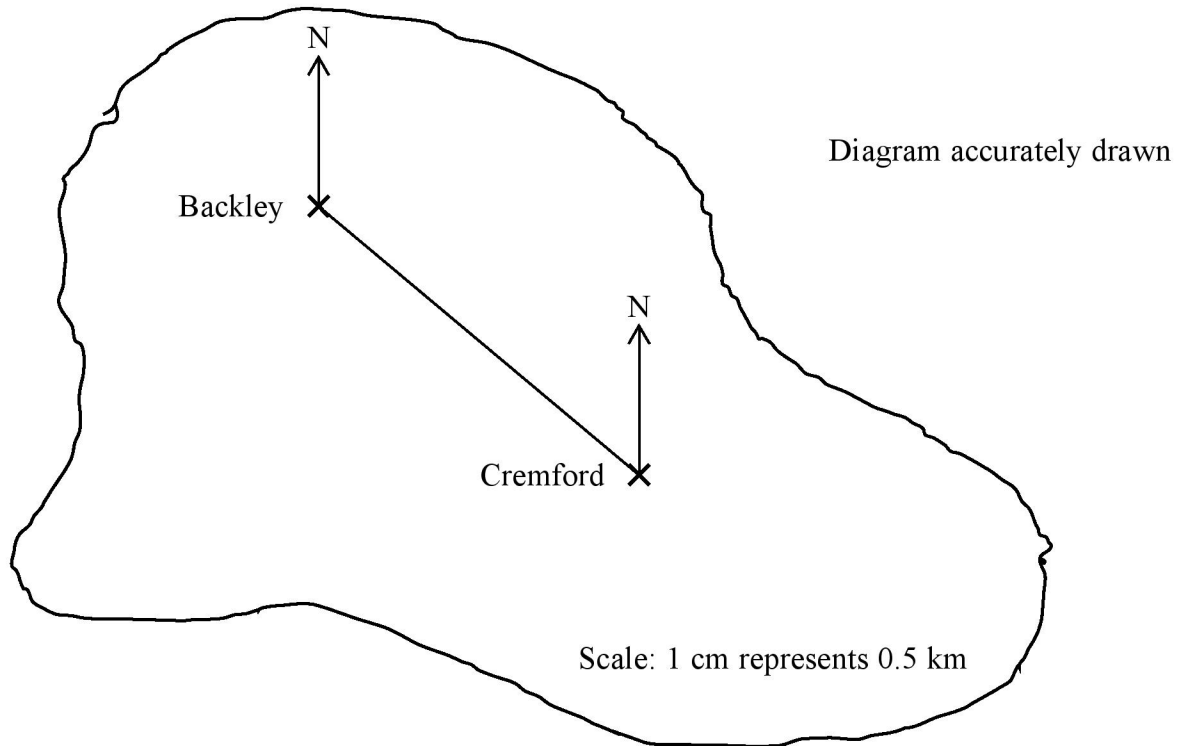


Hasmeet walks once round the circle again.

- (b) Has the mean distance that Hasmeet walks between one point and the next point changed?
You must give a reason for your answer.

Question 11 (AO1): 16% of students got this right (1 marks)

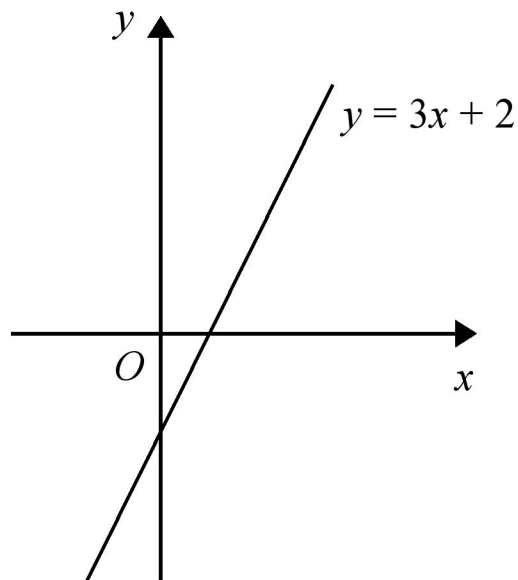
9 Here is a map of an island.



(b) Find the bearing of Cremford from Backley.

Question 12 (AO2): 15% of students got this right (1 marks)

- 23 Shona has to draw the line with equation $y = 3x + 2$
Here is her line.



- (c) Explain why Shona's line **cannot** be correct.

Question 13 (AO3): 15% of students got this right (2 marks)

23. A rugby team played six games.
The mean score for the six games is 14.5

The rugby team played one more game.
The mean score for all seven games is 16

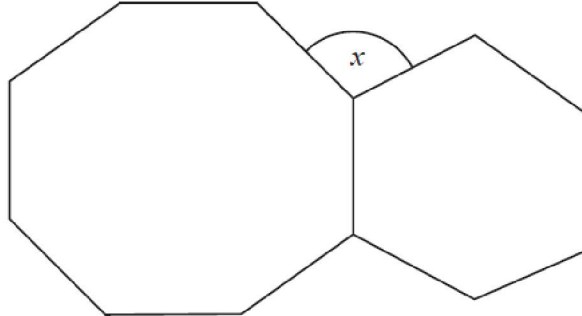
Work out the number of points the team scored in the seventh game.

..... points

(Total 2 marks)

Question 14 (AO3): 14% of students got this right (3 marks)

25



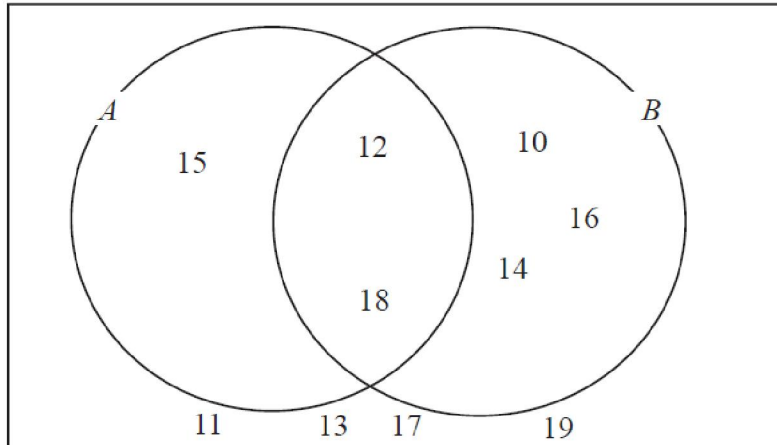
The diagram shows a regular octagon and a regular hexagon.

Find the size of the angle marked x

You must show all your working.

Question 15 (AO1): 12% of students got this right (4 marks)

26 Here is a Venn diagram.



(a) Write down the numbers that are in set

(i) $A \cup B$

(ii) $A \cap B$

One of the numbers in the diagram is chosen at random.

(b) Find the probability that the number is in set A'

Question 16 (AO3): 12% of students got this right (5 marks)

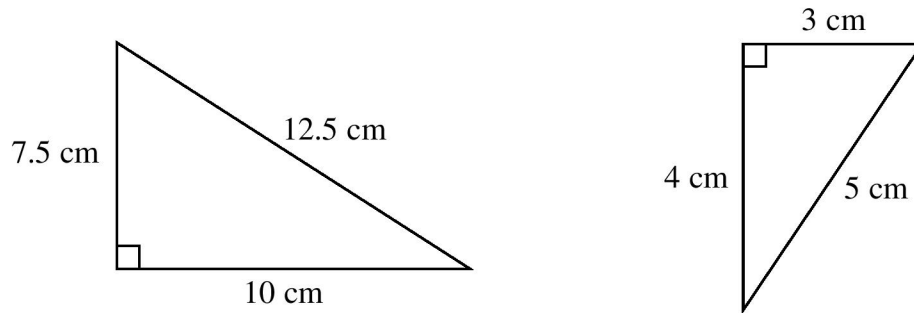
- 13** The size of the largest angle in a triangle is 4 times the size of the smallest angle.
The other angle is 27° less than the largest angle.

Work out, in degrees, the size of each angle in the triangle.
You must show your working.

(Total for Question 13 is 5 marks)

Question 17 (AO2): 11% of students got this right (2 marks)

21



Show that these two triangles are mathematically similar.

(Total for Question 21 is 2 marks)

Question 18 (AO2): 11% of students got this right (5 marks)

15 Mr Page uses oil to heat his home.

At the beginning of November there were 1000 litres of oil in his oil tank.

Mr Page bought enough oil to fill the tank completely.

He paid 50p per litre for this oil.

He paid a total amount of £750.

At the end of February Mr Page had 600 litres of oil in the tank.

He bought enough oil to fill the tank completely.

The cost of oil had increased by 4%.

Work out the total amount Mr Page paid for the oil he bought in February.

Question 19 (AO2): 10% of students got this right (2 marks)

19 Amzol thinks that $(x + 6)^2 = x^2 + 36$ for all values of x .

Is Amzol right?

You must show how you get your answer.

.....

(Total for Question 19 is 2 marks)

Question 20 (AO2): 9% of students got this right (2 marks)

- 14 (b) Show that, when a and b are both odd numbers, the value of $2(a + b)$ will always be a multiple of 4.

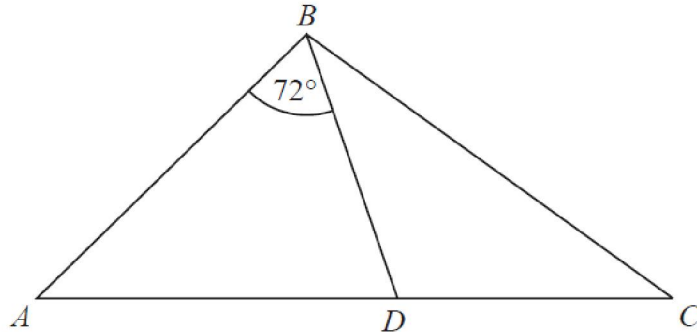
Question 21 (AO1): 9% of students got this right (3 marks)

24. Solve $x + 2y = 3$

$$x - y = 6$$

Question 22 (AO3): 9% of students got this right (5 marks)

29



ABC is an isosceles triangle with $BA = BC$.

D lies on AC .

ABD is an isosceles triangle with $AB = AD$.

Angle $ABD = 72^\circ$

Show that the triangle BCD is isosceles.

You must give a reason for each stage of your working.

Question 23 (AO1): 8% of students got this right (3 marks)

- 21 A gold bar has a mass of 12.5 kg.
The density of gold is 19.3 g/cm^3
Work out the volume of the gold bar.
Give your answer correct to 3 significant figures.

Question 24 (AO1): 8% of students got this right (3 marks)

24 Only blue vans and white vans are made in a factory.

The ratio of the number of blue vans to the number of white vans is 4 : 3

For blue vans,

the number of small vans : the number of large vans = 3 : 5

(b) Work out the fraction of the number of vans made in the factory that are blue and large.

Question 25 (AO2): 8% of students got this right (3 marks)

- 20 In London, 1 litre of petrol costs 108.9p
In New York, 1 US gallon of petrol costs \$2.83.

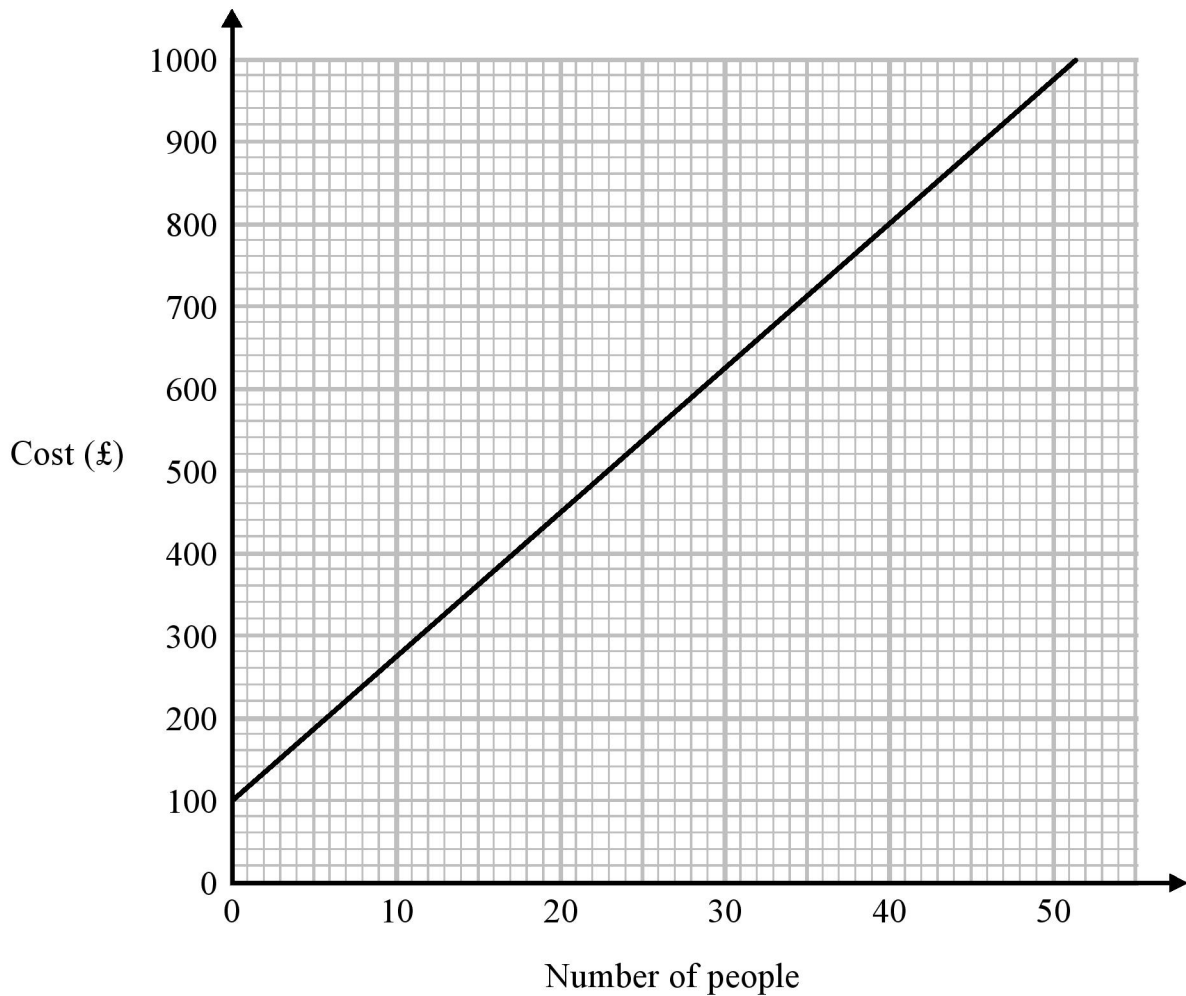
$$1 \text{ US gallon} = 3.785 \text{ litres}$$
$$£1 = \$1.46$$

In which city is petrol better value for money, London or New York?
You must show your working.

Question 26 (AO2): 6% of students got this right (2 marks)

13 Judith and Simon are organising different parties at a hotel.

This graph can be used to find the cost, in pounds (£), for different numbers of people.



More than 20 people want to go to Simon's party.

(c) Work out the cost for each extra person.

Question 27 (AO2): 5% of students got this right (3 marks)

22 There are only blue pens, green pens and red pens in a box.

The ratio of the number of blue pens to the number of green pens is 2 : 5

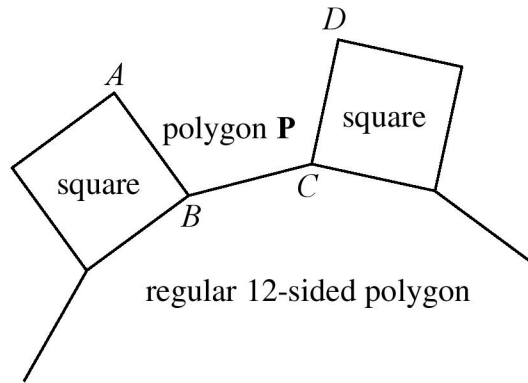
The ratio of the number of green pens to the number of red pens is 4 : 1

There are less than 100 pens in the box.

What is the greatest possible number of red pens in the box?

Question 28 (AO2): 3% of students got this right (4 marks)

- 19 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 19 is 4 marks)

Question 29 (AO2): 2% of students got this right (2 marks)

- 21 $100^a \times 1000^b$ can be written in the form 10^w
(c) Show that $w = 2a + 3b$

Answers to Qn 1 (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 2 (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 3 (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 4 (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 5 (AO1): 21% of students got this right

Part	Working or answer an examiner might expect to see	Mark	Notes
18 (a)	$\begin{array}{ccc} 4 & 7 & 10 \\ & 3 & 3 \end{array}$	1	This mark is given for a method to find the n th term
	$3n + 1$	1	This mark is given for the correct answer only
18 (b)	If $3n + 1 = 90$, then $n = 29.666\dots$	1	This mark is given for showing that 89 is not divisible by 3
	No, the pattern can't be made.	1	This mark is given for a correct conclusion supported by argument

Answers to Qn 6 (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 7 (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 8 (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

Answers to Qn 9 (AO1): 17% of students got this right

- 22 The price of all rail tickets increased by 7.5 %.
The price of a rail ticket from London to Ipswich increased by £3.75

Work out the price of the ticket before the increase.

$$7.5\% = \text{£}3.75$$

$$100\% = \frac{100}{7.5} \times \text{£}3.75$$

£50

Answers to Qn 10 (AO2): 17% of students got this right

Part	Working or answer an examiner might expect to see	Mark	Notes
18 (b)	No, the mean distance stays the same because the total distance and the number of points stays the same	1	This mark is given for a correct comment

Answers to Qn 11 (AO1): 16% of students got this right

Part	Working or answer an examiner might expect to see	Mark	Notes
9 (b)	130°	1	This mark is given for a correct measurement in the range 128 – 132

Answers to Qn 12 (AO2): 15% of students got this right

Question	Working	Answer	Mark	Notes
23 (c)		Evaluation	C1	for indication that the y intercept should be negative not positive

Answers to Qn 13 (AO3): 15% of students got this right

Question	Working	Answer	Mark	Notes
23	$16 \times 7 = 112$ $112 - 87$	25	2	M1 for $6 \times 14.5 (= 87)$ or $7 \times 16 (=112)$ or $6 \times 1.5 (= 9)$ or $7 \times 1.5 (= 10.5)$ A1 for 25

Question Order Created by Pinpoint Learnings Automatic Differentiation Algorithmn

Answers to Qn 14 (AO3): 14% of students got this right

Paper 1MA1: 2F			
Question	Working	Answer	Notes
25		105	P1 for process to find the exterior angle or interior angle of a hexagon or octagon P1 for process to find the both exterior angles or both interior angles A1 for 105 from correct working

Answers to Qn 15 (AO1): 12% of students got this right

Paper 1MA1: 2F			
Question	Working	Answer	Notes
26 (a)(i)		10, 12, 14, 15, 16, 18	B1 cao
(ii)		12, 18	B1 cao
(b)		$\frac{7}{10}$	M1 for 7 or indicating correct region or for 10, 14, 16, 11, 13, 17, 19 listed A1 for $\frac{7}{10}$ oe

Answers to Qn 16 (AO3): 12% of students got this right

Paper: 1MA1/3F				
Question	Working	Answer	Mark	Notes
13		92, 65, 23	P1 P1 P1 P1 A1	for two of x , $4x$ and $4x - 27$ (where x is the smallest angle) (dep) for equation summing their three angles to 180, eg $x + 4x + 4x - 27 = 180$ (dep P1) for correct process to simplify their algebraic expression, eg $9x - 27 (=180)$ for correct process to solve their equation of the form $ax + b = 180$ for three correct angles (order irrelevant)

Answers to Qn 17 (AO2): 11% of students got this right

Paper: 1MA1/3F				
Question	Working	Answer	Mark	Notes
21		Shown (supported)	M1 C1	method to divide a pair of corresponding sides, eg $7.5 \div 3 (= 2.5)$ or $3 \div 7.5 (= 0.4)$, or states scale factor is 2.5 or 0.4 or method to work out the size of an angle, eg $\tan^{-1}\left(\frac{7.5}{10}\right) (= 36.8 \text{ to } 36.9)$ shows or states that all sides are enlarged by the same factor or works out a pair of corresponding angles and states that the two triangles have the same angles

Answers to Qn 18 (AO2): 11% of students got this right

Part	Working or answer an examiner might expect to see	Mark	Notes
15	$750 \div 0.5 = 1500$	1	This mark is given for finding out how many litres of oil Mr Page bought in November
	$1000 + 1500 - 600 = 1900$	1	This mark is given for finding out how many litres of oil Mr Page bought in November
	$0.50 \times 1.04 = 0.52$	1	This mark is for finding out the cost of a litre of oil in February
	0.52×1900	1	This mark is given for a method to find out how much Mr Page paid in February
	988	1	This mark is given for the correct answer only

Answers to Qn 19 (AO2): 10% of students got this right

19 Amzol thinks that $(x + 6)^2 = x^2 + 36$ for all values of x .

Is Amzol right?

You must show how you get your answer.

$$(x + 6) \times (x + 6) = x^2 + 6x + 6x + 36$$

$$x^2 + 12x + 36$$

Answers to Qn 20 (AO2): 9% of students got this right

Part	Working or answer an examiner might expect to see	Mark	Notes
14 (b)	$a + b$ is even, $2a$ and $2b$ are even	1	This mark is given for a correct statement
	$a + b$ is always multiple of 2, so $2(a + b)$ is always a multiple of 4	1	This mark is given for a correct conclusion

Answers to Qn 21 (AO1): 9% of students got this right

Question	Working	Answer	Mark	Notes
24	$2y - y = 3 - 6$ or $x + 2x = 3 + 12$	$x = 5, y = -1$	3	M1 for a complete method to eliminate one variable (condone one arithmetic error) A1 $x = 5$ A1 $y = -1$ NB: Candidates showing no working score 0 marks

Answers to Qn 22 (AO3): 9% of students got this right

Paper 1MA1: 2F			
Question	Working	Answer	Notes
29	$\angle ADB = 72^\circ$ (base angles of isosceles triangle ABD) $\angle BAD = 180^\circ - 2 \times 72^\circ$ (angle sum of a triangle is 180°) $\angle BCA = 36^\circ$ (base angles of isosceles triangle ABC) $\angle BDC = 180^\circ - 72^\circ$ (angles on a straight line sum to 180°) $\angle DBC = 180^\circ - 36^\circ - 108^\circ$ (angle sum of a triangle is 180°)	Result shown	M1 for $\angle ADB = 72^\circ$ and $\angle BAD = 180^\circ - 2 \times 72^\circ$ M1 for $\angle BCA = "36^\circ"$ M1 for $\angle BDC = 180^\circ - 72^\circ$ C1 for complete chain of reasoning to find angle $DBC = 36^\circ$ and one correct reason C1 C1 dependent on all previous marks for correct deduction and full reasons.

Answers to Qn 23 (AO1): 8% of students got this right

Part	Working or answer an examiner might expect to see	Mark	Notes
21	12.5×1000	1	This mark is given for converting kg to g
	$12500 \div 19.3$	1	This mark is given for a method to find the density of the gold bar
	648	1	This mark is given for the correct answer only

Answers to Qn 24 (AO1): 8% of students got this right

Question	Working	Answer	Mark	Notes
24 (b)	$\frac{4}{7} \times \frac{5}{8}$	$\frac{20}{56}$	P1 P1 A1	for start to process e.g. $\frac{5}{8}$ for correct process to multiply fractions, e.g. $\frac{4}{7} \times \frac{5}{8}$ ft from (a), e.g. $\frac{5}{14}$, $\frac{20}{56}$, $\frac{1120}{3136}$

Answers to Qn 25 (AO2): 8% of students got this right

Part	Working an or answer examiner might expect to see	Mark	Notes
20	Cost of 1 litre of petrol in New York = $\$ \frac{2.83}{3.785} = \$0.7476\dots$	1	This mark is given for finding out the cost of a litre of petrol in New York in dollars
	Cost of 1 litre of petrol in New York = $\frac{0.7476\dots}{1.46} \text{ p} = 51.2\text{p}$	1	This mark is given for finding out the cost of a litre of petrol in New York in pence
	Petrol is better value for money in New York (0.51.2p < 108.9p)	1	This mark is given for a correct conclusion supported by working

Answers to Qn 26 (AO2): 6% of students got this right

Question	Working	Answer	Mark	Notes
13 (c)		17.50	M1 A1	for method to find cost for one guest, e.g. $(1000 - 100) \div 50$ for ans in the range 17 – 18; accept 17.5

Answers to Qn 27 (AO2): 5% of students got this right

Part	Working or answer an examiner might expect to see	Mark	Notes
22	Ratio of blue pens : green pens : red pens is 8 : 20 : 5	1	This mark is given for a method to find ratios of the three colours of pens
	$\frac{5}{33}$ pens are red; greatest number of pens = 99	1	This mark is given for finding the fraction of red pens
	15	1	This mark is given for the correct answer only

Answers to Qn 28 (AO2): 3% of students got this right

Paper: 1MA1/3F				
Question	Working	Answer	Mark	Notes
19		Shows polygon is a hexagon	M1 M1 A1 C1	for a complete method to find the interior or exterior angle of the dodecagon eg $180 - \frac{360}{12}$, $\frac{180}{12}(12-2)$ oe (= 150), $360 \div 12 (=30)$ for a complete method to find the interior angle of polygon P eg at <i>B</i> or <i>C</i> : $360 - "150" - 90 (= 120)$ or $"30" + 90 (= 120)$ or for a complete method to find the interior or exterior angle of the hexagon eg $180 - \frac{360}{6}$, $\frac{180}{6}(6-2)$ oe (= 120), $360 \div 6 (= 60)$ for 30 and 120 or 30 and 60 or 120 and 150 or 60 and 150 complete solution, fully supported by accurate figures

Answers to Qn 29 (AO2): 2% of students got this right

Part	Working or answer an examiner might expect to see	Mark	Notes
21 (c)	$100^a = 10^{2a}$, $1000^b = 10^{3b}$	1	This mark is given for writing 100^a or 1000^b as a power of 10
	$10^{2a} \times 10^{3b} = 10^{2a+3b}$ thus $w = 2a + 3b$	1	This mark is given for a correct conclusion