

Mathematics Paper 2

Structured Questions

Model Paper 2025

Time Allowed: 2 hour 10 minutes

Total Marks: 85

You must answer on the question paper.

You must bring a soft pencil (preferably type B or HB), a clean eraser, and a dark blue or black pen. You will also need geometrical instruments.

You may use a non-graphing scientific calculator.

Before attempting the paper, write your name, candidate number, centre name, and centre number clearly in the designated spaces.

Instructions for Candidates

- Answer all questions.
- Write your answer to each question in the space provided.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- You must show all necessary working clearly.
- Do not use an erasable pen or correction fluid.
- Avoid writing over any barcodes printed on the paper.

Information for Candidates

- This paper consists of a total of **85 marks**.
- The number of marks assigned for every question or its parts is indicated within brackets [].
- A formula sheet will be provided with this paper.

Please read all questions carefully and follow the instructions exactly to ensure your responses are properly evaluated.

1

(a) Write the number 324 000 in standard form.

..... [1]

(b) Evaluate $3.2 \times 10^3 + 7.1 \times 10^2$. Give your answer in standard form.

..... [2]

(c) Work out: $\frac{0.72}{\sqrt{0.09}}$.

..... [1]

2

A recipe uses flour, sugar, and butter in the ratio 3 : 2 : 5.

(a) How much sugar is needed if 480 g of flour is used?

..... [2]

(b) If a baker uses 180 g of sugar, how much total mixture is used?

..... [2]

(c) Hence, if the original recipe serves 6 people. How many people will the recipe serve if the total quantity of ingredients is increased to 1600 g?

..... [2]

3

A sum of money is invested for 2 years at a compound interest rate of 5% per year. At the end of 2 years, the value of the investment is £2205.

(a) Work out the original amount invested.

..... [2]

(b) What percentage is the earned interest of the original amount?

..... [2]

4

(a) Expand and simplify:

$$3(x + 4) - 2(x - 1)$$

..... [2]

(b) Solve by factorization:

$$x^2 + 6x + 8 = 0$$

..... [2]

5

A rectangle has length $x + 5$ cm and width x cm.
Its area is 84 cm^2 .

(a) Show that the equation for the area simplifies to $x^2 + 5x - 84 = 0$

..... [2]

(b) What's the width and length of the rectangle?

Length =
Width = [2]

6

The n th term of a sequence is given by

$$T_n = 2n^2 + n$$

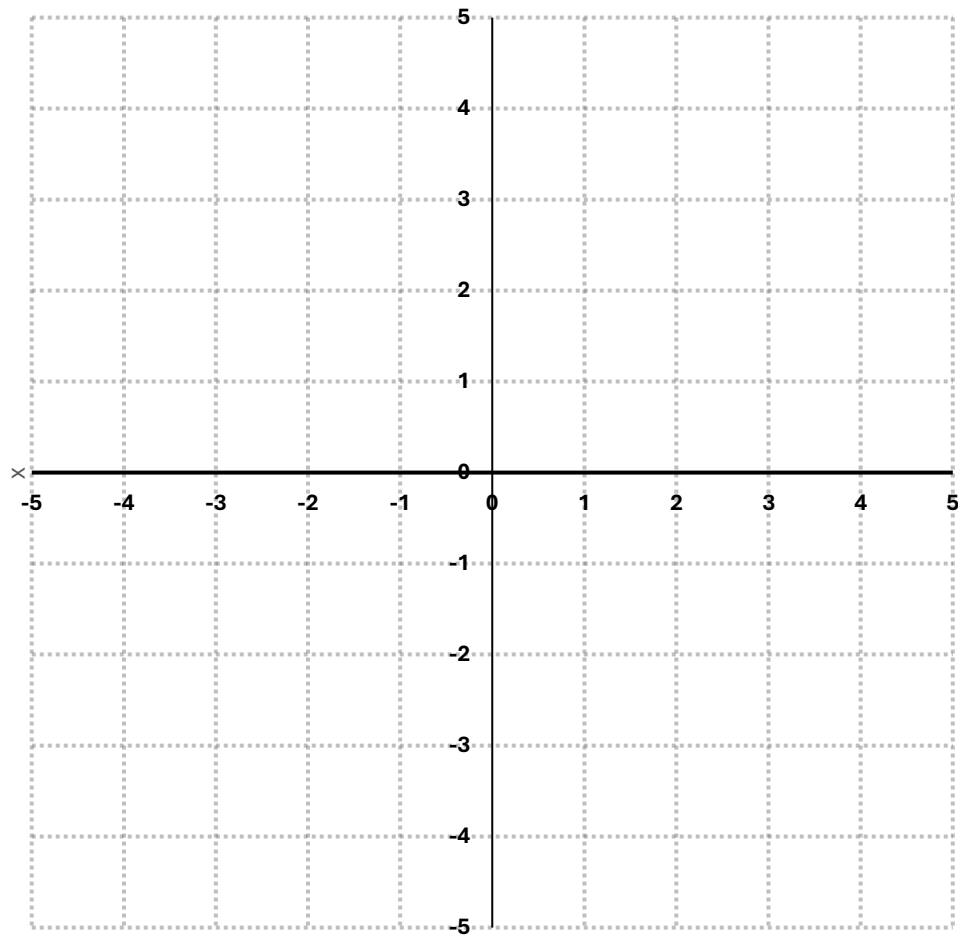
(a) Find $T_{21} - T_{12}$.

..... [2]

(b) Which term in the sequence is equal to 171?

..... [2]

7



(a) Plot the points $A(1,2)$, $B(3,4)$, $C(5,0)$ on a Cartesian grid above.

[1]

(b) Draw the straight line passing through A and B.

[1]

(c) Show that the equation of the line AB is

$$y = x + 1$$

..... **[1]**

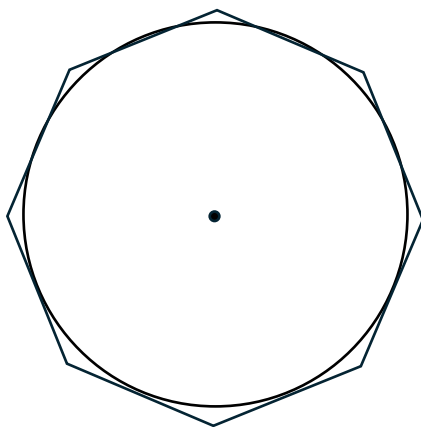
(d) The line $y = x + 1$ intersects the curve $y = -x^2 + 5x - 2$. Find the coordinates of the point(s) of intersection.

..... **[3]**

- (e) The line $y = x + 1$ is moved up by 2 units. Does the new line intersect the same curve? Why?

..... [3]

8



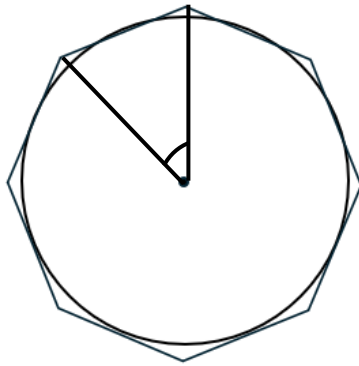
- (a) Calculate the size of each interior angle of the regular octagon.

..... [1]

- (b) Find the size of each exterior angle of the octagon.

..... [1]

- (c) A point is at the center of the circle. Find the angle between two adjacent vertices of the octagon at the center.

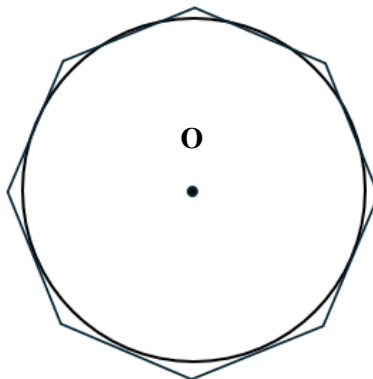


..... [1]

- (d) A line of symmetry is drawn through one vertex of the octagon. How many lines of symmetry does the octagon have?

..... [1]

- (e) Draw an accurate bearing of 060° from the center O to (any) one vertex.



..... [3]

9

A sector of a circle with radius 12 cm represents a park flower bed.

(a) Calculate the length of the arc of the sector. Give your answer upto two decimal places

..... [2]

(b) Find the area of the sector.

..... [2]

(c) The park owner builds a fence along the arc and the two radii. Calculate the total length of the fence.

..... [2]

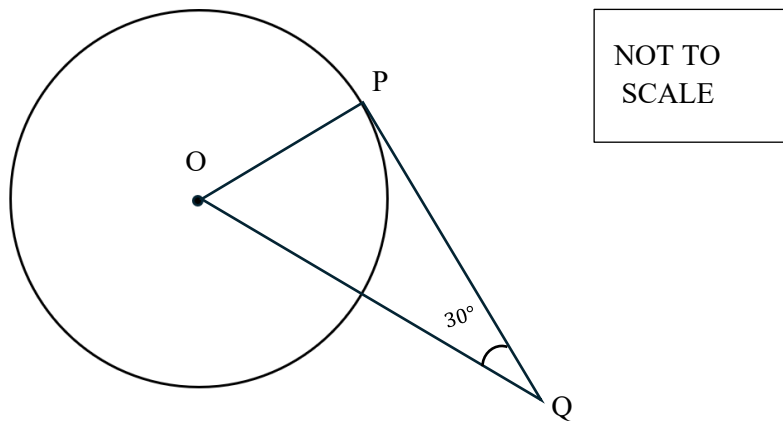
(d) Another circular bed has the same arc length but a central angle of 120° . Find its radius.

..... [2]

- (e) A path of width 2 m surrounds the sector.
Find the outer arc length after adding the path. Give your answer in cm.

..... [2]

- 10 A circle has centre O and a tangent PQ touches the circle at point P. A line from O to Q makes an angle of 30° with the tangent.



- (a) Find the radius if $PQ = 10$ cm.

..... [3]

(b) A second circle is drawn with the same centre and twice the radius. Calculate the difference in area between the two circles.

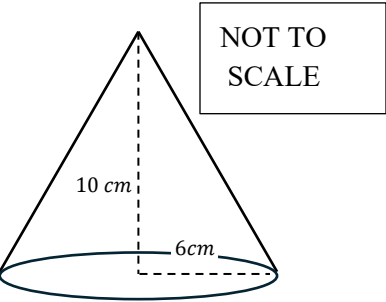
..... [2]

(c) The line OQ is extended to meet the circumference of the larger circle at point R. Draw a rough sketch (diagram with accurate measurements is not necessary) and show that triangle OPR is isosceles.

..... [2]

11

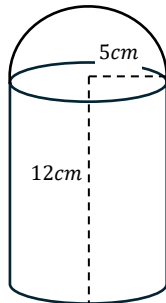
(a) A cone has radius 6 cm and height 10 cm.
 Work out the total surface area of the cone. Use $\pi = 3.142$ and give your answer to 1 decimal place.



..... [2]

- (b) A solid is made by placing a hemisphere on top of a cylinder.
 The radius of both parts is 5 cm.
 The height of the cylinder is 12 cm.
 Use $\pi = 3.142$.

NOT TO
SCALE



- i. Work out the total volume of the solid. Give your answer to 1 decimal place.

..... [2]

- ii. Work out the total surface area of the solid. Give your answer to 1 decimal place.

..... [2]

- iii. This shape is used as a water container.
 It is filled completely with water.
 The water is poured into small bottles, each holding 300 ml.
 $(1\text{ml} = 1\text{cm}^3)$
 How many full bottles can be filled with the water?

..... [2]

12

A researcher records the following quiz scores out of 10 from 10 students:

6, 3.5, 7.5, 6, 9, 8, 7.5, 6, 5.5, 5.5

- (a) Work out the median of the scores.

..... [2]

- (b) What type of data is it? Qualitative or quantitative? Discrete or continuous?

..... [2]

- (c) The researcher also records the hours each student studied, and finds that as hours studied increases, so do the scores.

What is the type of correlation between hours studied and quiz score? Positive or negative?

..... [1]

13

A delivery company keeps records of how parcels are shipped.

(a) The probability that a parcel is sent via drone, truck, train, or ship is given below:

Mode	Drone	Truck	Train	Ship
Probability	0.18	0.42	0.22	p

- i. Find the value of p .

..... [1]

- ii. Find the probability that a randomly selected parcel is either sent by truck then train, or by train then truck.

..... [1]

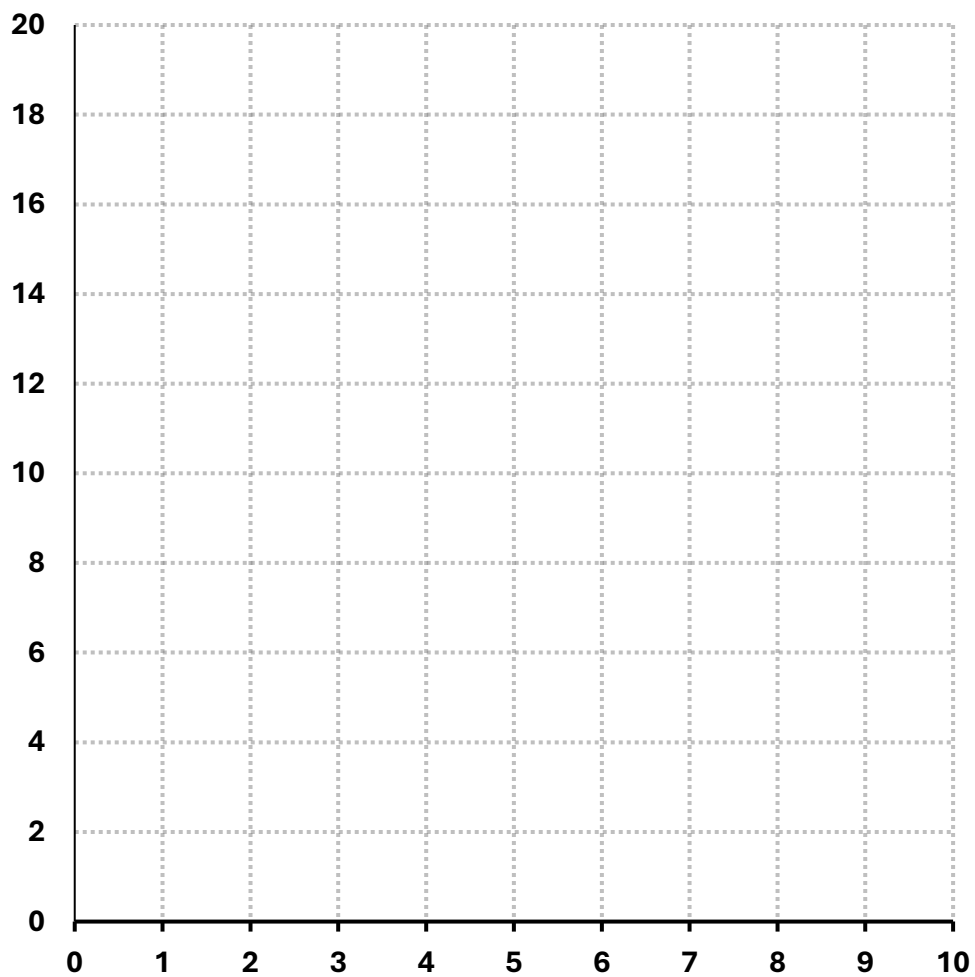
- iii. Find the probability that a parcel is not shipped by drone.

..... [1]

- (b) The company also records the number of hours each delivery driver spends delivering per day over 60 days. The grouped data is below:

Time(hrs)	$4 < t \leq 5$	$5 < t \leq 6$	$6 < t \leq 7$	$7 < t \leq 8$	$8 < t \leq 9$	$9 < t \leq 10$
Frequency	6	10	18	14	8	4

- i. Draw a labelled histogram to represent the data.



- ii. Estimate how many days a driver spent more than 7.5 hours delivering.

..... [2]

- (c) The company claims: “Most parcels are shipped by air.” Use the probability data from part (a) to assess this claim.

..... [2]

- (d) A manager says: “The average time spent delivering is about 6.5 hours, so most drivers work around that time.”

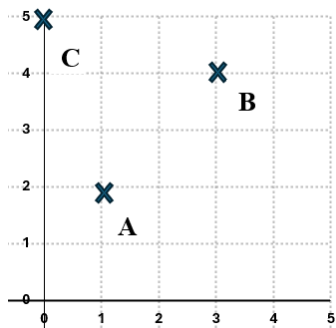
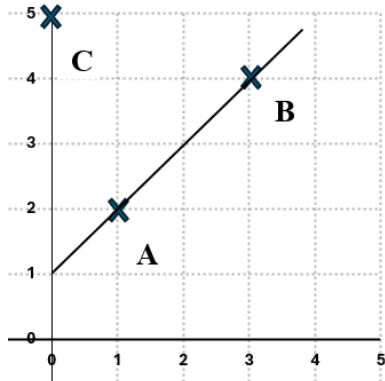
Use the histogram or frequency table from part (b) to assess this statement.

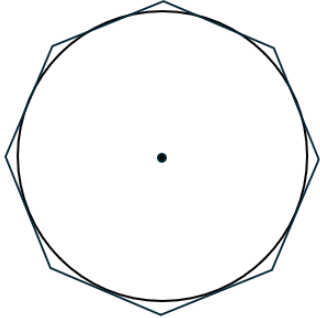
..... [3]

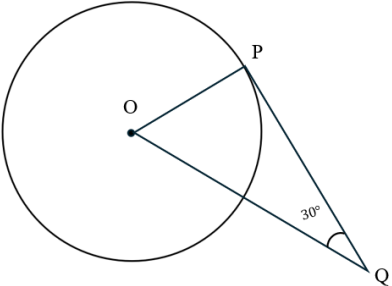
Marking Scheme

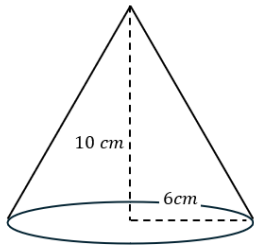
Question		Solution	Notes
Q1	(a) Write the number 324 000 in standard form.	3.24×10^5	B1 for correct standard
	(b) Evaluate $3.2 \times 10^3 + 7.1 \times 10^2$. Give your answer in standard form.	$3200 + 710 = 3910$ $\rightarrow 3.91 \times 10^3$	M1 for correct addition with powers of 10 A1 for final answer in standard form
	(c) Work out $\frac{0.72}{\sqrt{0.09}}$	$\sqrt{0.09} = 0.3$ So, $\frac{0.72}{0.3} = 2.4$	B1 for correct final answer
Q2	A recipe uses flour, sugar, and butter in the ratio 3 : 2 : 5.		
	(a) How much sugar is needed if 480 g of flour is used?	Total parts = $3 + 2 + 5 = 10$ 3 parts = 480 1 part = 160 sugar (2 parts) = $160 \times 2 = 320$ g	M1 for finding 1 part A1 for correct value of sugar
	(b) If a baker uses 180 g of sugar, how much total mixture is used?	2 parts = 180 1 part = 90 total = 10 parts $90 \times 10 = 900$ g	M1 for using ratio to find full amount A1 for correct value of total mixture
	(c) Hence, if the original recipe serves 6 people. How many people will the recipe serve if the total quantity of ingredients is increased to 1600 g?	10 parts = original total = $3+2+5=10$ 800 g So 1600 g is double serves $6 \times 2 = 12$ 12 people	M1 for proportional reasoning A1 for correct number of people
Q3	A sum of money is invested for 2 years at a compound interest rate of 5% per year. At the end of 2 years, the value of the investment is £2205.		
	(a) Work out the original amount invested.	Use compound interest formula: $\text{Final} = P \times \left(1 + \frac{r}{100}\right)^n$ Let P be the original amount: $2205 = P \times (1.05)^5$ $P = \frac{2205}{1.1025}$ $= 2000$	M1 for division with correct power A1 for correct value of original amount invested
	(b) What percentage is the earned interest of the original amount?	Interest = $2205 - 2000 = 205$ % Interest = $\frac{205}{2000} \times 100 = 10.25\%$	M1 for substituting interest into correct percentage formula A1 for correct percentage

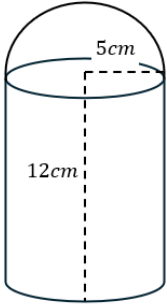
Q4	(a) Expand and simplify: $3(x + 4) - 2(x - 1)$	$3x + 12 - 2x + 2$ $= x + 14$	M1 for expanding both brackets correctly A1 for fully simplified expression
	(b) Solve by factorization: $x^2 + 6x + 8 = 0$	$x^2 + 6x + 8 = 0$ $x^2 + 4x + 2x + 8 = 0$ $x(x + 4) + 2(x + 4) = 0$ $(x + 2)(x + 4) = 0$ So, solutions: $x = -2, x = -4$	M1 for factorizing correctly A1 for both correct solutions
Q5	A rectangle has length $x + 5$ cm and width x cm. Its area is 84 cm^2 .		
	(a) Show that the equation for the area simplifies to $x^2 + 5x - 84 = 0$	Area = length \times width $x(x + 5) = 84$ Expand: $x^2 + 5x = 84$ Rearrange: $x^2 + 5x - 84 = 0$	M1 for forming and expanding A1 for rearranging
	(b) What's the width and length of the rectangle?	Solve the quadratic equation: $x^2 + 5x - 84 = 0$ (by any method) $x = 7$ and $x = -12$ (reject) Width = $x = 7 \text{ cm}$ Length = $x + 5 = 12 \text{ cm}$	M1 for correctly solving quadratic equation and selecting positive root A1 for correct values of length and width
Q6	The n th term of a sequence is given by $T_n = 2n^2 + n$		
	(a) Find $T_{21} - T_{12}$.	$T_{21} = 2(21)^2 + 2$ $= 2(441) + 21$ $= 903$ $T_{12} = 2(12)^2 + 12$ $= 2(144) + 12$ $= 288 + 12$ $= 300$ Difference = $903 - 300 = 603$	M1 for correct substitution for both terms A1 for correct difference
	(b) Which term in the sequence is equal to 171?	$2n^2 + n = 171$ $2n^2 + n - 171 = 0$ (factorize or use quadratic formula) $n = -9.5$ (reject) and $n = 9$ So, 9 th term = 171	M1 for formulating quadratic equation and uses formula or factorization to solve, rejects negative root. A1 for correct value of n

Q7	(a) Plot the points $A(1,2)$, $B(3,4)$, $C(5,0)$ on a Cartesian grid above.	<p>Points plotted correctly at $(1,2)$, $(3,4)$, $(5,0)$</p> 	B1 for all three points correctly plotted.
	(b) Draw the straight line passing through A and B.		B1 for a straight line passes through A and B accurately.
	(c) Show that the equation of the line AB is $y = x + 1$	<p>Gradient (m) = $\frac{4-2}{3-1} = 1$ y-intercept (c) = 1 (using slope-intercept form) $y = x + 1$ (oe) (or any other method)</p>	B1 for Correct equation
	(d) The line $y = x + 1$ intersects the curve $y = -x^2 + 5x - 2$. Find the coordinates of the point(s) of intersection.	<p>Set $x + 1 = -x^2 + 5x - 2$ Rearrange: $0 = -x^2 + 5x - 2 - x - 1$ $0 = -x^2 + 4x - 3$ Multiply by -1: $x^2 - 4x + 3 = 0$ Factorize: $(x - 1)(x - 3) = 0$ (or use quadratic equation to work out the roots) $x = 1$ or $x = 3$. For $x = 1$, $y = 2$. For $x = 3$, $y = 4$. Points: $(1, 2)$ and $(3, 4)$.</p>	M1 for setting up the equation and simplifying correctly to the quadratic equation M1 for solving the quadratic equation (either by factorization or by quadratic equation) A1 for both correct points of intersection
	(e) The line $y = x + 1$ is moved up by 2 units. Does the new line intersect the same curve? Why?	<p>New line: $y = x + 3$ Solve: $x + 3 = -x^2 + 5x - 2$ Rearrange: $0 = -x^2 + 5x - 2 - x - 3$</p>	M1 for forming correct equation for new line M1 for calculating

		$0 = -x^2 + 4x - 5$ Multiply by -1: $x^2 - 4x + 5 = 0$ Discriminant: $b^2 - 4ac$ $(-4)^2 - 4(1)(5)$ $= 16 - 20 = -4$ Negative discriminant → no real solutions → no intersection.	discriminant correctly A1 for the correct conclusion
Q8			
	(a) Calculate the size of each interior angle of the regular octagon.	Interior angle = $\frac{(n-2) \times 180^\circ}{n}$ $= \frac{(8-2) \times 180^\circ}{8} = 135^\circ$	B1 for correct interior angle
	(b) Find the size of each exterior angle of the octagon.	Exterior angle = $\frac{360^\circ}{n} = \frac{360^\circ}{8}$ $= 45^\circ$	B1 for correct exterior angle
	(c) A point is at the center of the circle. Find the angle between two adjacent vertices of the octagon at the center.	Angle at center between adjacent vertices = 45° (same as exterior)	B1 for correct center angle
	(d) A line of symmetry is drawn through one vertex of the octagon. How many lines of symmetry does the octagon have?	8 lines of symmetry	B1 for 8 lines of symmetry
	(e) Draw an accurate bearing of 060° from the center to (any) one vertex.	Step 1: Bearings are measured clockwise from North (vertical up). Step 2: From the center O, measure 60° clockwise using a protractor. Step 3: Draw a straight line from O through the circumference at 60° Step 4: Mark the point where the line meets the circle as the required vertex.	B1 for correct center O and circle visible B1 for correct bearing direction angle marked accurately B1 for vertex point drawn accurately.
Q9	A sector of a circle with radius 12 cm and angle 150° represents a park flower bed.		

	(a) Calculate the length of the arc of the sector. Give your answer upto two decimal places	$\text{Arc length} = \frac{\theta}{360} \times 2\pi r$ $= \frac{150}{360} \times 2\pi(12)$ $= 10\pi \approx 31.42\text{cm}$	M1 for correct substitution into the formula A1 for correct value of arc length
	(b) Find the area of the sector.	$\text{Area} = \frac{\theta}{360} \times \pi r^2$ $= \frac{150}{360} \times \pi(12)^2$ $= 60\pi \approx 188.50\text{cm}^2$	M1 for correct substitution into the formula A1 for correct value of area of sector
	(c) The park owner builds a fence along the arc and the two radii. Calculate the total length of the fence.	$\text{Fence length} = \text{arc length} + 2 \text{ radii}$ $= 31.42 + 24 = 55.42\text{cm}$	M1 for correct equation setup A1 for correct value of fence length
	(d) Another circular bed has the same arc length but a central angle of 120° . Find its radius.	$\text{Same arc length } (10\pi), \text{ new angle } 120^\circ$ $\frac{120}{360} \times 2\pi r = 10\pi$ $\frac{1}{3} \times 2\pi r = 10\pi$ $\frac{2r}{3} = 10$ $r = 15\text{cm}$	M1 for correct equation setup A1 for correct value of radius
	(e) A path of width 2 m surrounds the sector. Find the outer arc length after adding the path. Give your answer in cm.	$\text{New radius} = 12 + 200 \text{ cm}$ $= 212 \text{ cm}$ $\text{Outer arc} = \frac{150}{360} \times 2\pi(212)$ $= \frac{5}{12} \times 424\pi$ $= 176.67\pi \approx 555.015\text{cm}$	M1 for substitution into formula with new radius A1 for correct outer arc
Q10			
	(a) Find the radius if $PQ = 10$ cm.	$\text{Right triangle OPQ with angle } 30^\circ, \text{ opposite} = \text{radius},$ $\text{adjacent} = PQ = 10$ $\rightarrow \text{Use tan: } \tan 30^\circ = \frac{\text{radius}}{10}$	M1 for identifying correct trigonometric ratio

		$r = 10 \tan 30^\circ$ $r = 5.77 \text{ cm}$	M1 for correct substitution A1 correct value of radius
	(b) A second circle is drawn with the same centre and twice the radius. Calculate the difference in area between the two circles.	Area of original circle: $\pi r^2 = \pi(5.77)^2 \approx 104.6 \text{ cm}^2$ Area of larger circle: $\pi(2r)^2$ $= \pi(11.54)^2$ $\approx 418.37 \text{ cm}^2$ Difference = 313.77 cm^2	M1 for correctly substituting the radii into the formula A1 for the correct difference
	(c) The line OQ is extended to meet the circumference of the larger circle at point R. Draw a rough sketch (diagram with accurate measurements is not necessary) and show that triangle OPR is isosceles.	(diagram with accurate measurements is not necessary) OR and OP are both radii of the same (larger) circle \rightarrow equal in length. So triangle OPR has two equal sides \rightarrow isosceles triangle	B1 for identifying that both OP and OR are radii of the larger circle (equal lengths). B1 for the correct conclusion.
Q11	(a) A cone has radius 6 cm and height 10 cm. Work out the total surface area of the cone. Use $\pi = 3.142$ and give your answer to 1 decimal place. 	Slant height (l) = $\sqrt{6^2 + 10^2}$ ≈ 11.66 Surface Area = $\pi r l + \pi r^2$ $= (3.142 \times 6 \times 11.66)$ $+ (3.142 \times 6^2)$ $\approx 333 \text{ cm}^2$	M1 for using Pythagoras correctly to find slant height and substitute in the right formula A1 for correct final answer to 1 dp
	(b) A solid is made by placing a hemisphere on top of a cylinder. The radius of both parts is 5 cm. The height of the cylinder is 12 cm. Use $\pi = 3.142$.		

			
	<p>i. Work out the total volume of the solid. Give your answer to 1 decimal place.</p>	<p>Volume of cylinder = $\pi r^2 h = 3.142 \times 25 \times 12 = 942.6 \text{ cm}^3$</p> <p>Volume of hemisphere = $\frac{2}{3} \pi r^3 = \frac{2}{3} \times 3.142 \times 125 = 261.83 \text{ cm}^3$</p> <p>Total volume = $942.6 + 261.83 = 1204.4 \text{ cm}^3$</p>	<p>M1 for correct method with both volumes A1 for correct final total rounded</p>
	<p>ii. Work out the total surface area of the solid. Give your answer to 1 decimal place.</p>	<p>Curved surface of cylinder = $2\pi rh = 2 \times 3.142 \times 5 \times 12 = 377.04 \text{ cm}^2$</p> <p>Curved surface of hemisphere = $2\pi r^2 = 2 \times 3.142 \times 25 = 157.1 \text{ cm}^2$</p> <p>Base of cylinder is included (circle): $\pi r^2 = 3.142 \times 25 = 78.55 \text{ cm}^2$</p> <p>Flat circular face between cylinder and hemisphere is not exposed</p> <p>Total surface area = $377.04 + 157.1 + 78.55 \approx 612.7 \text{ cm}^2$</p>	<p>M1 for Correct parts used: cylinder curved + hemisphere curved + cylinder base A1 for correct final surface area</p>
	<p>iii. This shape is used as a water container. It is filled completely with water. The water is poured into small bottles, each holding 300 ml. $(1 \text{ ml} = 1 \text{ cm}^3)$</p>	<p>Total volume = $1204.4 \text{ cm}^3 = 1204.4 \text{ ml}$</p> <p>Number of full bottles = $\frac{1204.4}{300} = 4.013 \approx 4$ 4 bottles</p>	<p>M1 for converting cm^3 to ml or using direct equivalence A1 for correct final answer</p>

	How many full bottles can be filled with the water?												
Q12	A researcher records the following quiz scores out of 10 from 10 students: 6, 3.5, 7.5, 6, 9, 8, 7.5, 6, 5.5, 5.5												
	(a) Work out the median of the scores.	Put in order: 3.5, 5.5, 5.5, 6, 6 , 6 , 7.5, 7.5, 8, 9 Median = average of 5th and 6th values: $\frac{6+6}{2} = 6$	M1 for ordering values correctly A1 for correct median										
	(b) What type of data is it? Qualitative or quantitative? Discrete or continuous?	Quantitative, discrete	B1 for quantitative, B1 for discrete										
	(c) The researcher also records the hours each student studied, and finds that as hours studied increases, so do the scores. What is the type of correlation between hours studied and quiz score? Positive or negative?	Positive correlation	A1 for positive										
Q13	A delivery company keeps records of how parcels are shipped.												
	(a) The probability that a parcel is sent via drone, truck, train, or ship is given below: <table border="1"><tr><td>Mode</td><td>Drone</td><td>Truck</td><td>Train</td><td>Ship</td></tr><tr><td>Probability</td><td>0.18</td><td>0.42</td><td>0.22</td><td>p</td></tr></table>	Mode	Drone	Truck	Train	Ship	Probability	0.18	0.42	0.22	p		
	Mode	Drone	Truck	Train	Ship								
	Probability	0.18	0.42	0.22	p								
	i. Find the value of p .	$p = 1 - (0.18 + 0.42 + 0.22) = 0.18$	B1 for correct subtraction: $1 - (\text{sum of known probabilities})$										
ii. Find the probability that a randomly selected parcel is either sent by truck then train, or by train then truck.	$P(\text{Truck then Train}) = 0.42 \times 0.22 = 0.0924$ $P(\text{Train then Truck}) = 0.22 \times 0.42 = 0.0924$ Total probability = $0.0924 + 0.0924 = \mathbf{0.1848}$	A1 for sums correctly											
iii. Find the probability that a parcel is not shipped by drone.	$P(\text{not Drone}) = 1 - 0.18 = 0.82$	B1 for using the complement of drone probability											
	(b) The company also records the number of hours each delivery driver spends delivering per day over 60 days. The grouped data is below:												

	<table><tr><td>Time(hrs)</td><td>4 < t ≤ 5</td><td>5 < t ≤ 6</td><td>6 < t ≤ 7</td><td>7 < t ≤ 8</td><td>8 < t ≤ 9</td><td>9 < t ≤ 10</td></tr><tr><td>Frequency</td><td>6</td><td>10</td><td>18</td><td>14</td><td>8</td><td>4</td></tr></table>	Time(hrs)	4 < t ≤ 5	5 < t ≤ 6	6 < t ≤ 7	7 < t ≤ 8	8 < t ≤ 9	9 < t ≤ 10	Frequency	6	10	18	14	8	4		
Time(hrs)	4 < t ≤ 5	5 < t ≤ 6	6 < t ≤ 7	7 < t ≤ 8	8 < t ≤ 9	9 < t ≤ 10											
Frequency	6	10	18	14	8	4											
	i. Draw a labelled histogram to represent the data.	Class widths: all 1. So, frequency density = frequency Draw histogram with bars of heights: 6, 10, 18, 14, 8, 4 respectively.	B1 for correct labelling of axes and use of class intervals on the x-axis B1 for correct heights B1 for adjacent bars, accurately aligned with class-intervals, and cover the full range														
	ii. Estimate how many days a driver spent more than 7.5 hours delivering.	→ Length of interval = 1 hour → Half of the 14 days would be above 7.5 hours → 14 ÷ 2 = 7 Full intervals above 8 hours: 8 < t ≤ 9 → 8 days 9 < t ≤ 10 → 4 days Total estimated = 7 (from 7–8 interval) + 8 + 4 = 19 days	M1 for identifying relevant intervals A1 for correct final estimate														
	(c) The company claims: “Most parcels are shipped by air.” Use the probability data from part (a) to assess this claim.	From part (a): Probability by air (Drone) = 0.18 Others: Truck 0.42, Train 0.22, Ship 0.18 Since only 18% are by air, and the largest method is truck at 42%, the claim is not supported.	M1 for using relevant probabilities A1 for conclusion with justification														
	(d) A manager says: “The average time spent delivering is about 6.5 hours, so most drivers work around that time.” Use the histogram or frequency table from part (b) to assess this statement.	Midpoint estimate for mean: (4.5×6 + 5.5×10 + 6.5×18 + 7.5×14 + 8.5×8 + 9.5×4) / 60 = (27 + 55 + 117 + 105 + 68 + 38) / 60 = 410 / 60 ≈ 6.83 hours. However, mode is 6–7 hours (highest frequency 18), and histogram shows skew towards longer hours. Most drivers are not working around 6.5 exactly – the distribution is spread. So the	M1 for Estimating mean accurately from grouped data M1 for comparing mean to modal class and distribution shape A1 for balanced judgment														

		statement is an oversimplification.	
--	--	--	--

Ziauddin Examination Board SSC (Advanced Level)

Mathematics Paper II

Table of Specifications (ToS)

No.	TOPICS	Question No. in model paper	AO	Total Marks	AO1: Knowledge & Understanding – 30%		
1	THE LANGUAGE OF MATHEMATICS	Q1 (a,b,c)	AO1	4	AO2: Application – 40%		
		Q2 (a,b,c)	AO2	6	AO3: Analysis & Evaluation – 30%		
		Q3 (a,b)	AO3	4			
2	ALGEBRA	Q4 (a,b)	AO1	4	AO	%	P2 Marks
		Q5 (a,b)	AO2	4			
		Q6 (a,b)	AO3	4			
3	GRAPHS	Q7(a,b,c)	AO1	3			
		Q7(d)	AO2	3	AO2	40%	0.40 x 85 = 35
		Q7(e)	AO3	3	AO3	30%	0.30 x 85 = 25
4	GEOMETRY	Q8 (a,b,c,d,e)	AO1	7			85
		Q9 (a,b,c,d,e)	AO2	10			
		Q10 (a,b,c)	AO3	7			
5	MENSURATION AND VECTORS	Q11(a)	AO1	2			
		Q11(b)(i,ii)	AO2	4			
		Q11(b)(iii)	AO3	2			
6	PROBABILITY AND STATISTICS	Q12	AO1	5			
		Q13(a,b)	AO2	8			
		Q13(c,d)	AO3	5			
			Total	85			