

© International Baccalaureate Organization 2025

All rights reserved. No part of this product may be reproduced in any form or by any electronic or mechanical means, including information storage and retrieval systems, without the prior written permission from the IB. Additionally, the license tied with this product prohibits use of any selected files or extracts from this product. Use by third parties, including but not limited to publishers, private teachers, tutoring or study services, preparatory schools, vendors operating curriculum mapping services or teacher resource digital platforms and app developers, whether fee-covered or not, is prohibited and is a criminal offense.

More information on how to request written permission in the form of a license can be obtained from <https://ibo.org/become-an-ib-school/ib-publishing/licensing/applying-for-a-license/>.

© Organisation du Baccalauréat International 2025

Tous droits réservés. Aucune partie de ce produit ne peut être reproduite sous quelque forme ni par quelque moyen que ce soit, électronique ou mécanique, y compris des systèmes de stockage et de récupération d'informations, sans l'autorisation écrite préalable de l'IB. De plus, la licence associée à ce produit interdit toute utilisation de tout fichier ou extrait sélectionné dans ce produit. L'utilisation par des tiers, y compris, sans toutefois s'y limiter, des éditeurs, des professeurs particuliers, des services de tutorat ou d'aide aux études, des établissements de préparation à l'enseignement supérieur, des fournisseurs de services de planification des programmes d'études, des gestionnaires de plateformes pédagogiques en ligne, et des développeurs d'applications, moyennant paiement ou non, est interdite et constitue une infraction pénale.

Pour plus d'informations sur la procédure à suivre pour obtenir une autorisation écrite sous la forme d'une licence, rendez-vous à l'adresse <https://ibo.org/become-an-ib-school/ib-publishing/licensing/applying-for-a-license/>.

© Organización del Bachillerato Internacional, 2025

Todos los derechos reservados. No se podrá reproducir ninguna parte de este producto de ninguna forma ni por ningún medio electrónico o mecánico, incluidos los sistemas de almacenamiento y recuperación de información, sin la previa autorización por escrito del IB. Además, la licencia vinculada a este producto prohíbe el uso de todo archivo o fragmento seleccionado de este producto. El uso por parte de terceros —lo que incluye, a título enunciativo, editoriales, profesores particulares, servicios de apoyo académico o ayuda para el estudio, colegios preparatorios, desarrolladores de aplicaciones y entidades que presten servicios de planificación curricular u ofrezcan recursos para docentes mediante plataformas digitales—, ya sea incluido en tasas o no, está prohibido y constituye un delito.

En este enlace encontrará más información sobre cómo solicitar una autorización por escrito en forma de licencia: <https://ibo.org/become-an-ib-school/ib-publishing/licensing/applying-for-a-license/>.

Mathematics: applications and interpretation
Standard level
Paper 1

10 November 2025

Zone A afternoon | **Zone B** afternoon | **Zone C** afternoon

Candidate session number

1 hour 30 minutes

--	--	--	--	--	--	--	--	--	--

Instructions to candidates

- Write your session number in the boxes above.
- Do not open this examination paper until instructed to do so.
- A graphic display calculator is required for this paper.
- Answer all questions.
- Answers must be written within the answer boxes provided.
- Unless otherwise stated in the question, all numerical answers should be given exactly or correct to three significant figures.
- A clean copy of the **mathematics: applications and interpretation SL formula booklet** is required for this paper.
- The maximum mark for this examination paper is **[80 marks]**.



3. [Maximum mark: 6]

Abigail is planning an end-of-school celebration. She asks all her classmates to choose both a main course and an ice cream flavour.

She organizes the replies from her classmates into the following table.

		Main course			
		Burgers	Chicken skewers	Salad	Pasta
Ice cream flavour	Chocolate	15	10	12	16
	Strawberry	11	14	13	12
	Vanilla	10	21	11	5

(a) Find the total number of classmates who replied. [1]

Abigail performs a χ^2 test for independence at the 5% significance level to see if the main course choice is independent of the ice cream flavour choice.

(b) Write down the null hypothesis. [1]

(c) Find the p -value of Abigail's test. [2]

(d) Write down the conclusion of the test in context. Justify your answer. [2]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

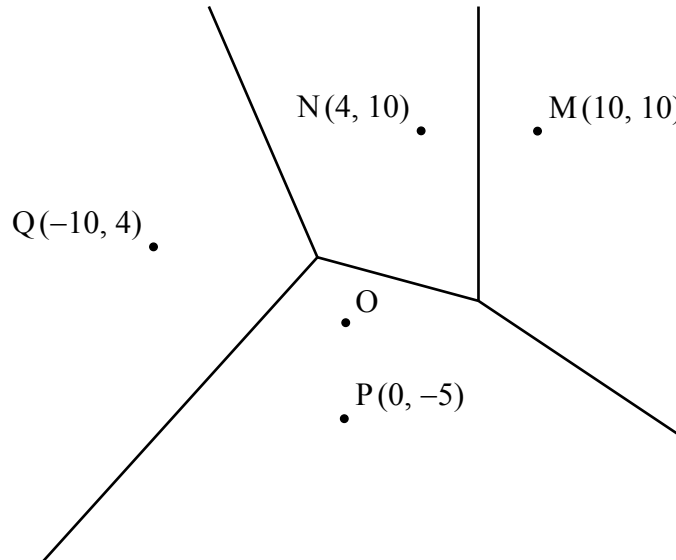
.....

.....



5. [Maximum mark: 9]

The following Voronoi diagram represents a map of a town. It shows the location of four bakeries, at points $M(10, 10)$, $N(4, 10)$, $P(0, -5)$ and $Q(-10, 4)$. The town centre is at location O with coordinates $(0, 0)$.



Olga is at the town centre and wants to go to the nearest bakery.

- (a) Write down the nearest bakery to Olga. [1]

Before going to the nearest bakery, Olga checks on her phone and finds that it is closed.

- (b) Find which bakery or bakeries Olga should go to instead. Justify your answer. [3]

- (c) Write down the equation of the line containing all the points that are of equal distance from bakery M and bakery N . [1]

- (d) Find the equation of the perpendicular bisector of $[MP]$. [4]

(This question continues on the following page)

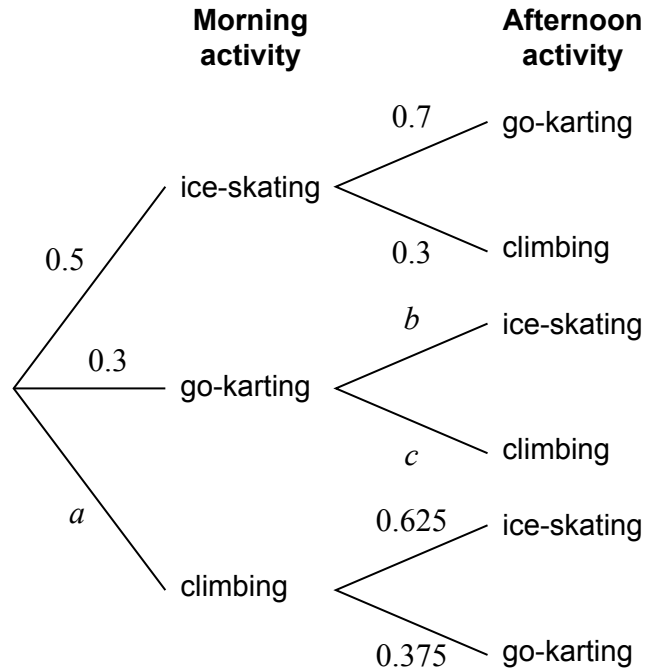


Please **do not** write on this page.
Answers written on this page will not be
marked.



7. [Maximum mark: 7]

At a sports centre, students choose one activity in the morning and a second, different activity in the afternoon. The tree diagram shows the probability of students choosing each morning and afternoon activity.



- (a) Write down the value of a . [1]
- (b) Find the probability of a student choosing ice-skating in the morning and climbing in the afternoon. [2]
- (c) Find an expression, in terms of b , for the probability of a student choosing go-karting in the morning and ice-skating in the afternoon. [1]
- (d) At the end of the day, 87.5% of the students chose ice-skating. Calculate the value of
 - (i) b .
 - (ii) c . [3]

(This question continues on the following page)



8. [Maximum mark: 6]

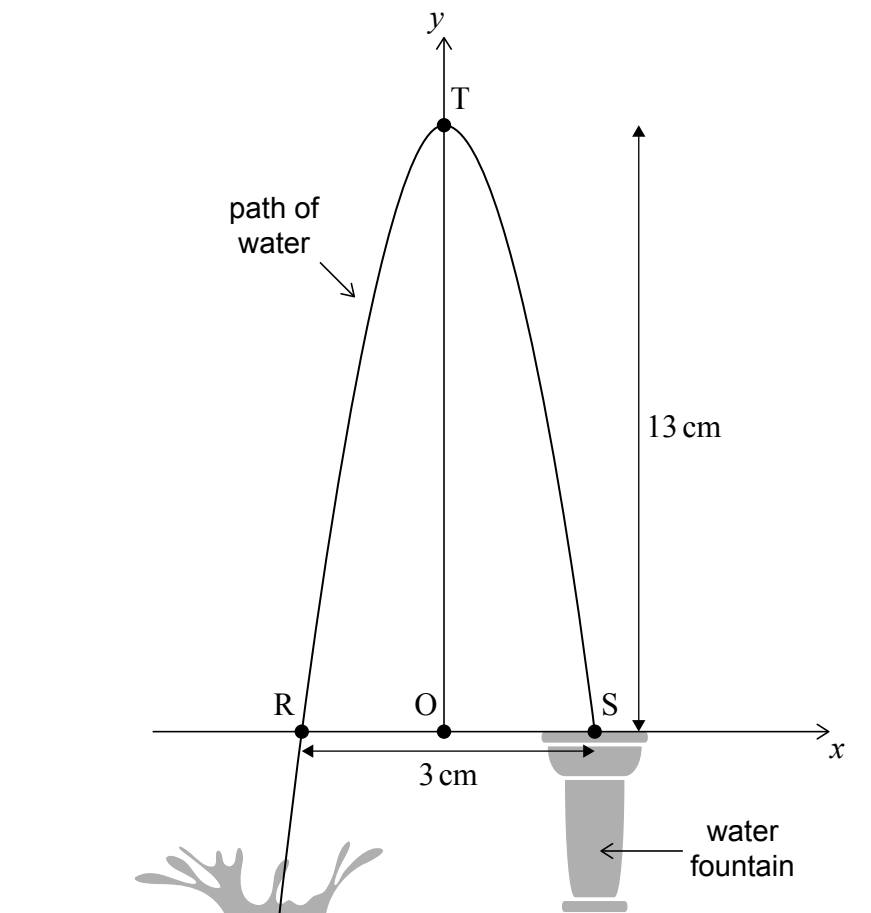
Eduardo takes a photograph of a water fountain. He notices the path of the water looks like a parabola, and he decides to model the curve using the equation

$$y = ax^2 + bx + c.$$

Eduardo takes measurements from the photograph. He finds the distance between the x -intercepts, R and S, to be 3 cm and the maximum height of the water to be 13 cm above the fountain.

These measurements are shown on the following diagram, where the point $(0, 0)$ is indicated as O and the vertex, T, is on the y -axis.

diagram not to scale



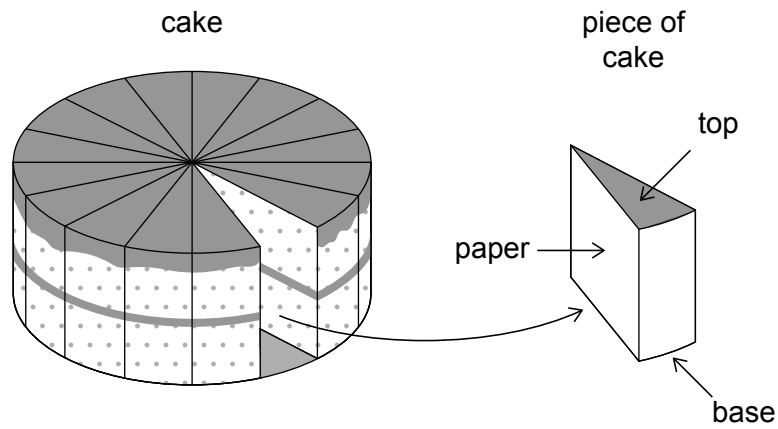
- (a) Write down the value of c . [1]
- (b) (i) Write down the coordinates of S. [2]
(ii) Use the coordinates for S to write down an equation, in terms of only a and b . [2]
- (c) Find the value of a and the value of b in Eduardo's model. [3]

(This question continues on the following page)



11. [Maximum mark: 6]

A cylindrical-shaped cake has diameter 22 cm and height 10 cm. Coco cuts the cake into 16 pieces of equal size, as shown in the diagram.



(a) Find the volume of one piece of cake. [3]

Paper is wrapped around all three **vertical** sides of a piece of cake.

(b) Find the area of the paper used to wrap around one piece of cake, given that the paper fits exactly. [3]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



Please **do not** write on this page.
Answers written on this page will not be
marked.



20EP20