



Cambridge Assessment
International Education

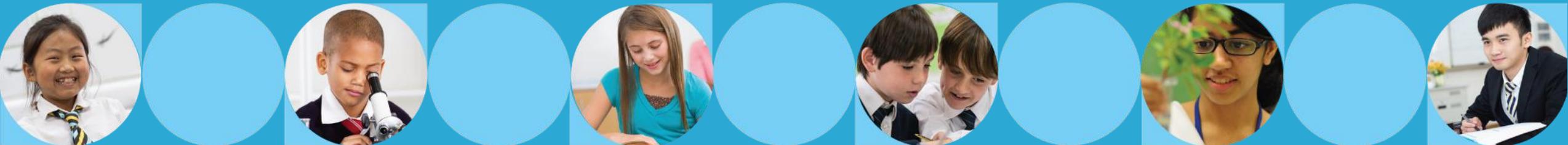
Getting ready to teach...

Cambridge O Level Mathematics D (4024)

Charlotte Colucci – Senior Marketing Communications Manager

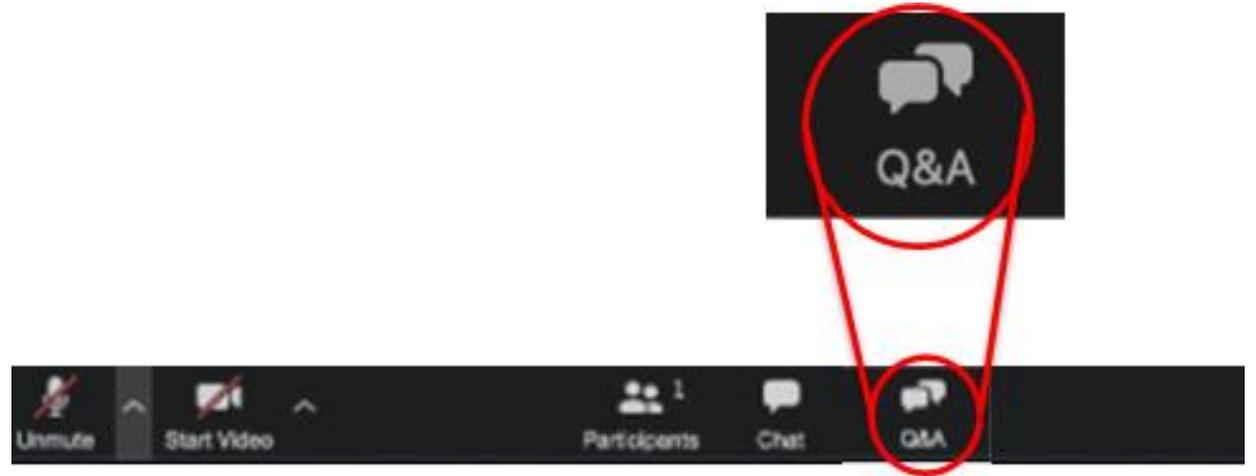
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Jeff Fair – Cambridge Trainer



Housekeeping

- ▶ Microphones & cameras switched off.
- ▶ Please add questions to the Q&A area (**not the chat**).
- ▶ Like the questions you want answered (we will prioritise those with most 'likes').
- ▶ Q&A session at the end of presentation.



Welcome



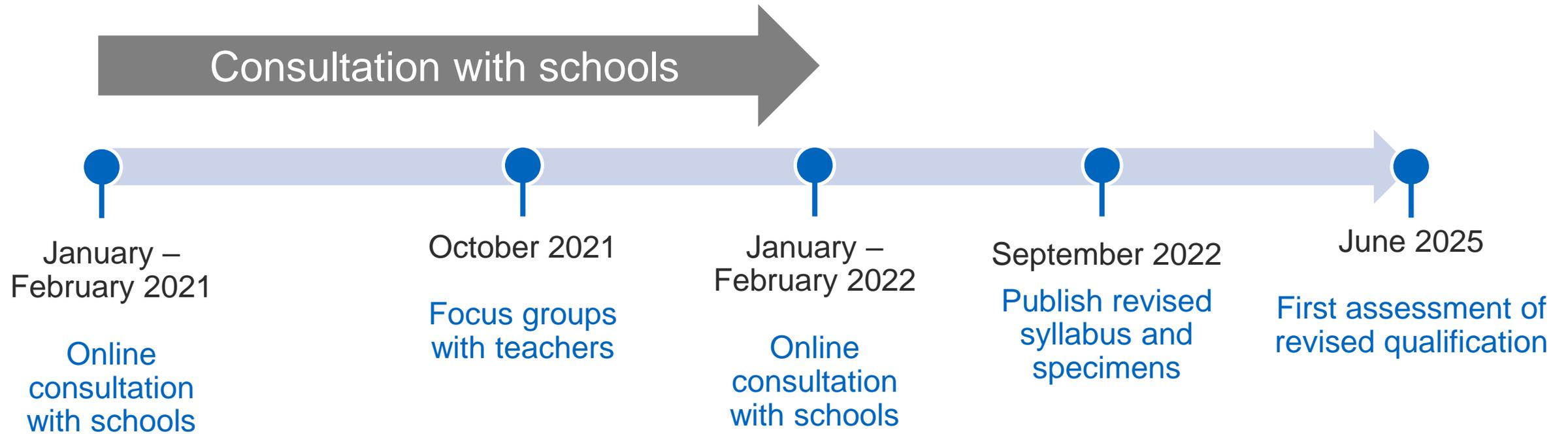
- ▶ Changes to Cambridge O Level Mathematics D (4024) for **assessment from 2025**
- ▶ Support and endorsed resources
- ▶ Where and when to find more information
- ▶ Any questions?

Why make any changes?

- ▶ We regularly review our qualifications to make sure they are up-to-date and fit for purpose.
- ▶ Our qualifications reflect the latest thinking in each subject area, drawn from expert international research to include new and refined ideas and check what we do is still best practice.
- ▶ We consult with a range of stakeholders and use their feedback to make sure everything is working well.
- ▶ Opportunity to improve successful qualifications to make things better for students and teachers.



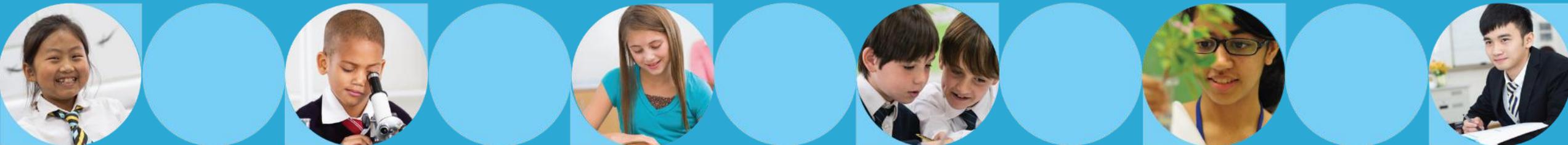
Redevelopment timeline





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Cambridge O Level Mathematics D (4024) for 2025



Key headlines



- ▶ Equally balanced papers.
- ▶ No change in demand.
- ▶ Clear and simple format, language & layout.
- ▶ Updated and clarified content.
- ▶ New formula sheet.
- ▶ Updated wording for Aims, AOs, and learner attributes.

What is staying the same?



- ▶ **Style of assessment and types of items**
 - ▶ Paper 1 is non-calculator.
 - ▶ Paper 2 is a calculator paper.
 - ▶ Short answer questions and structured questions as the current assessment, but now included in both papers.
- ▶ **Assessing mathematics not language skills:**
 - ▶ Accessibility of our papers.
 - ▶ Use of Plain English.
 - ▶ Consistent use of command words.
 - ▶ Minimising use of context in questions.
- ▶ **Aims, learner attributes and assessment objectives**
 - ▶ Wording updated and clarified but the meaning is the same.

The assessment – what is changing?

Equally balanced exam papers

- Equal number of marks, duration and demand
- Formula list in each paper
- Mark schemes will include **more** part marks



We have balanced the papers and blended the question types to make the papers **more accessible** and **more reliable** to **improve** the examination experience for the candidates.

OVERVIEW	Paper 1 (non-calculator)	Paper 2 (calculator)
Duration	2 hours	2 hours
Total marks	100 marks	100 marks
Item types	Short-answer and structured questions	Short-answer and structured questions
Other information	Calculator not allowed	Calculator allowed
	Externally assessed	Externally assessed
	AO1: 40–50%	AO1: 40–50%
	AO2: 50–60%	AO2: 50–60%

The overall demand of the qualification is the **same**

What does the assessment look like?

Past paper 1 from 2018:

ELECTRONIC CALCULATORS MUST NOT BE USED IN THIS PAPER

1 (a) Evaluate $\frac{2}{7} + \frac{1}{3}$.

Answer [1]

(b) Evaluate $\frac{2}{5} \times 1\frac{1}{5}$.

Answer [1]

2 (a) Write $17\frac{1}{2}\%$ as a fraction in its simplest form.

Answer [1]

(b) Evaluate $6 + 4(1 - 0.4)$.

Answer [1]

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← OLD vs NEW →

Both Paper 1 and Paper 2 will start off with shorter items to ease the candidate into the paper. These pages will look similar to the old Paper 1 format.

Specimen Papers 2025:

Calculators must not be used in this paper

1 Write 2.70486 correct to 3 decimal places.

..... [1]

2 Simplify $10y - 2y + 5y$.

..... [1]

3 The bar chart shows the marks scored by a group of students in a test.

Score	Frequency
4	2
5	3
6	1
7	3
8	5
9	6
10	3

(a) Write down the mode score.

..... [1]

(b) Work out the total number of students in the group.

..... [1]

(c) Find the median score.

..... [1]

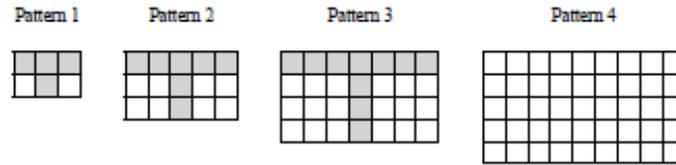
© Cambridge University Press & Assessment 2022 4024/01/SP/25 [Turn over]

What do we mean by structured questions?

Specimen Paper 1 2025 →

Here's an example of a structured question. The question has been designed to support students through the question as they work their way through the problems. These questions help students make connections across different areas of mathematics and will be very familiar.

11 Here are the first three patterns in a sequence made using grey squares and white squares. Pattern 4 is incomplete.



(a) Shade squares in the diagram above to complete Pattern 4. [1]

(b) Complete the table for the patterns in this sequence.

Pattern number	1	2	3	4	5
Number of grey squares	4	7	10		
Number of white squares	2	8	18		

[2]

(c) (i) Find an expression, in terms of n , for the number of grey squares in Pattern n .

..... [2]

(ii) Find an expression, in terms of n , for the number of white squares in Pattern n .

..... [2]

(d) Pattern 10 and Pattern 11 are made from grey squares and white squares.

Find the difference between the total number of squares needed by Basma to make Pattern 10 and the total number of squares needed to make Pattern 11.

..... [3]

(e) Pattern k in this sequence needs 61 grey squares.

Find the number of white squares needed for Pattern k .

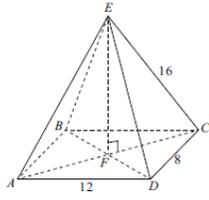
..... [4]

Structured questions

Specimen Paper 2 2025

The question papers use a mix of different question types to assess content in the most appropriate way.

24



$ABCDE$ is a rectangular-based pyramid.
 AC and BD intersect at F .
 EF is perpendicular to FC .

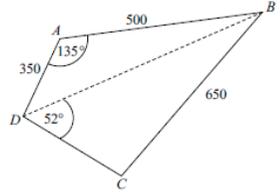
$AD = 12$ cm, $DC = 8$ cm and $EC = 16$ cm.

(a) Write down the number of planes of symmetry of the pyramid. [1]

(b) Show that $EF = 14.3$ cm correct to 1 decimal place. [4]

(c) Calculate the angle between the line ED and the base $ABCD$ [2]

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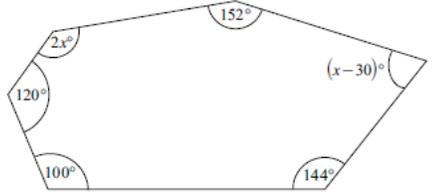
$ABCD$ is a quadrilateral on flat ground with $AB = 500$ m, $BC = 650$ m and $DA = 350$ m.
 Angle $DAB = 135^\circ$ and angle $BDC = 52^\circ$.

(a) Calculate DB .
 $DB = \dots\dots\dots$ m [3]

(b) Calculate obtuse angle BCD .
 Angle $BCD = \dots\dots\dots$ [4]

Structured questions help students make connections and provide scaffolding to break larger problems into smaller parts.

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The diagram shows a hexagon.
 Form an equation and solve it to find the value of x .

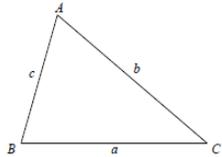
$x = \dots\dots\dots$ [4]

Questions without scaffolding allow candidates to approach a task using a method of their choice, and give the opportunity for them to demonstrate a complete method.

Across both papers, students are able to demonstrate more of what they know and can do.

The assessment – List of formulas

- ▶ Most formulas on the list will be very familiar to students.
- ▶ The notes and examples column in the content identifies which formulas are not given on the formula sheet.
- ▶ Pythagoras' theorem is **not** included in the list because identifying it is needed in a geometric problem is the first step to solving the problem, so it's important to be able to award a mark for writing this formula down
- ▶ Compound interest formula is **not** included on the list because compound interest can be calculated in a number of different ways, and students should be encouraged to use the method that works best for them.

List of formulas	
Area, A , of triangle, base b , height h .	$A = \frac{1}{2}bh$
Area, A , of circle of radius r .	$A = \pi r^2$
Circumference, C , of circle of radius r .	$C = 2\pi r$
Curved surface area, A , of cylinder of radius r , height h .	$A = 2\pi rh$
Curved surface area, A , of cone of radius r , sloping edge l .	$A = \pi rl$
Curved surface area, A , of sphere of radius r .	$A = 4\pi r^2$
Volume, V , of prism, cross-sectional area A , length l .	$V = Al$
Volume, V , of pyramid, base area A , height h .	$V = \frac{1}{3}Ah$
Volume, V , of cylinder of radius r , height h .	$V = \pi r^2 h$
Volume, V , of cone of radius r , height h .	$V = \frac{1}{3}\pi r^2 h$
Volume, V , of sphere of radius r .	$V = \frac{4}{3}\pi r^3$
For the equation $ax^2 + bx + c = 0$, where $a \neq 0$	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
For the triangle shown,	
	$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$ $a^2 = b^2 + c^2 - 2bc \cos A$ Area = $\frac{1}{2}bc \sin A$

Content – what has changed?

We have added:

- ▶ Surds
- ▶ Exponential growth and decay



And as part of wider learning outcomes

- ▶ Recurring decimal notation & conversion
- ▶ Expanding more than two brackets
- ▶ Finding roots graphically
- ▶ Composite functions
- ▶ Draw and interpret graphs for exponential growth & decay
- ▶ Recognising and sketching graphs (up to quadratic)
- ▶ Knowing the alternate segment theorem for circles.

We have removed:

- ▶ Loci
- ▶ Matrices



And as part of wider learning outcomes

- ▶ Increasing & decreasing a quantity by a given ratio
- ▶ Showing that two shapes are congruent
- ▶ Constructions of simple shapes and bisectors
(Construction of a triangle is still included)

We have balanced the amount of content added with content removed in terms of teaching time.

NEW! Mathematical conventions



Mathematical conventions

- ▶ We have added to notes/examples useful requirements to be aware of in terms of mathematical conventions and notation.
- ▶ There is additional information after the content in the updated syllabus.
- ▶ For example, the differences between sketching and plotting a graph or guidance on good practice on accuracy within questions.

How does this affect teaching?

Teachers will need to:

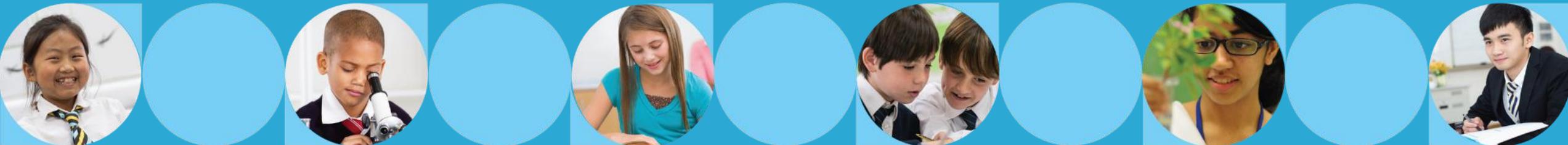
- ▶ Update any schemes of work to reflect content changes.
- ▶ Check 'Notes and examples' in the subject content for more information.
- ▶ New topics are illustrated in the specimens.
- ▶ Help students learn how to work with a formula sheet.





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Support to help you deliver the updated syllabuses



Support materials

A wide range of materials will be available through our **School Support Hub**, which also includes details of endorsed resources for this syllabus, and access to a subject forum:

cambridgeinternational.org/support

Resources	
Resource	Date available
Scheme of Work	July 2022
Specimen Paper Answers: available	March 2023
Classroom teaching materials including Teacher Guide	July 2023
Example Candidate Responses	Early 2026, after first examination in 2025

About Resource Plus

Explain challenging topics and skills to your learners with high quality videos, ready-made lesson plans and teaching materials.

- ▶ Resource Plus for Cambridge IGCSE Mathematics (0580) is already available through the School Support Hub.
- ▶ Previously available by subscription only, Resource Plus is now available to all Cambridge International Schools at no extra cost.
- ▶ Many of these teaching resources can also be used to teach Cambridge O Level Mathematics D (4024).

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Teaching Pack – Venn diagrams
Lesson 5 – Calculating simple probabilities using Venn diagrams
Cambridge IGCSE™
Mathematics 0580

Version 1.0

Try this!

In a class of 27 learners:
there are 5 students who wear glasses. There are 15 boys in the class and 3 girls wear glasses.

Notations

n The number of elements in one set.
 \mathcal{U} **Universal Set** is the set that contains everything we start with.

n (wearing a tie)

Wearing a Tie Black Hair

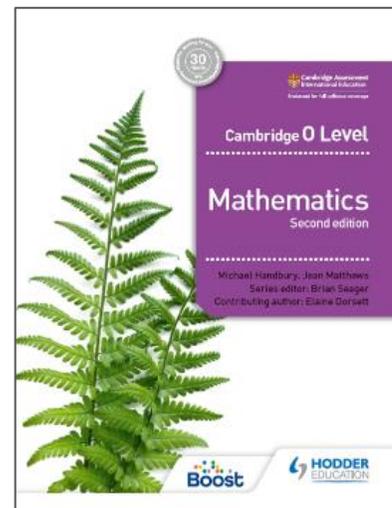
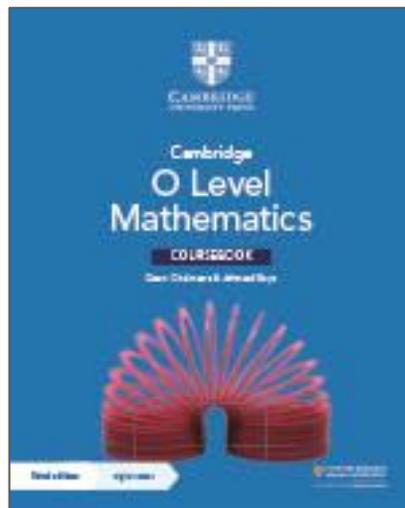
a) Draw a Venn diagram for this information.
If I select a student at random:
What is the probability that they are:

b) A girl? $\frac{12}{27} = \frac{4}{9}$

c) A boy that does not wear glasses?
 $\frac{13}{27}$

Endorsed resources (publishing from March 2023)

Qualification	Publisher			
	Cambridge University Press	Collins	Hodder	Marshall Cavendish
Cambridge O Level Mathematics (4024)	✓		✓	



Professional Development



Coming soon!

- ▶ We are working on online and face-to-face training to support teachers delivering the updated syllabuses.
- ▶ Full details to follow.
- ▶ Book training through our Professional Development calendar:
www.cambridgeinternational.org/training

Find out ‘What’s new’ and subscribe for syllabus updates

To stay up to date about changes to the syllabuses you teach, including Cambridge O Level Mathematics:

- ▶ Visit the ‘What’s new’ pages on our public website: cambridgeinternational.org/new
- ▶ Download the *Syllabus Changes* guide for full details of updated syllabuses: cambridgeinternational.org/syllabuschanges
- ▶ Subscribe for updates to receive details of changes to syllabuses: cambridgeinternational.org/syllabusupdates

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What's new February 2022

What's new February 2022

We are committed to continually improving the qualifications and support we offer our students. We update these pages twice a year in September and February to make sure you have the latest information about what's new from Cambridge International.

Syllabus changes (International)
September 2021 version 1

This guide provides advance notification of changes to syllabuses.

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Thank you
Any questions?

