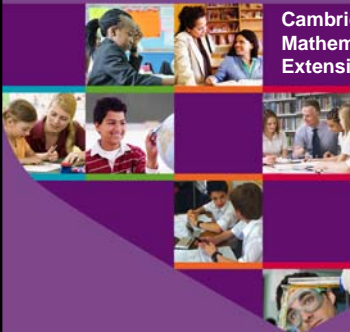


**CAMBRIDGE**  
International Examinations  
Learn • Discover • Achieve

Cambridge  
Professional  
Development

**Cambridge 9709 AS/A Level  
Mathematics  
Extension Training - Day 2**



**A** Cambridge  
Assessment

---

---

---

---

---

---

---

---

**CAMBRIDGE**  
International Examinations  
Learn • Discover • Achieve

Cambridge  
Professional  
Development

**Session 1**

Welcome and outline of the day.

---

---

---

---

---

---

---

---


**CAMBRIDGE**  
International Examinations  
Learn • Discover • Achieve

Cambridge  
Professional  
Development

**Timetable**

**Day 2**

<b>09.00 - 09.10</b>	Welcome back
<b>09.10 - 10.00</b>	Appropriate challenge
<b>10.00 - 10.20</b>	Break
<b>10.20 - 12.20</b>	The assessment
<b>12.20 - 13.20</b>	Lunch
<b>13.20 - 14.00</b>	Using past assessment materials
<b>14.00 - 14.40</b>	Schemes of work
<b>14.40 - 15.00</b>	Break
<b>15.00 - 15.40</b>	Planning lessons
<b>15.40 - 15.50</b>	Preparing learners for assessment
<b>15.50 - 16.00</b>	Close




---

---

---

---

---

---

---

---

## Session 2 – stretch and challenge

The objectives of this session are to:

- build a list of ideas to stretch and challenge more able learners
- create a list of ideas for supporting and encouraging weaker learners.

---

---

---

---

---

---

---

---

## Activity 6 – stretch and challenge

- In your groups discuss the ideas that you have had for stretch and challenge.
- List your ideas and be prepared to offer them to all delegates.

---

---

---

---

---

---

---

---

## Stretch and challenge

- HOTs not MOTs
- Task wall
- Bloom's Taxonomy

---

---

---

---

---

---

---

---

**CAMBRIDGE**  
International Examinations  
Learn • Discover • Achieve

Cambridge  
Professional  
Development

### Bloom's Taxonomy diagram

Higher Order Thinking Skills

Creating

Evaluating

Analysing

Applying

Understanding

Remembering

Lower Order Thinking Skills

---

---

---

---

---

---

---

---

**CAMBRIDGE**  
International Examinations  
Learn • Discover • Achieve

Cambridge  
Professional  
Development

### Useful website

<http://resources.depaul.edu/teaching-commons/teaching-guides/learning-activities/Pages/activities-for-metacognition.aspx>

---

---

---

---

---

---

---

---

**CAMBRIDGE**  
International Examinations  
Learn • Discover • Achieve

Cambridge  
Professional  
Development

### Activity 7

- In your groups discuss the ideas that you have had for supporting and encouraging weaker learners.
- List your ideas and be prepared to offer them to all delegates.

---

---

---

---

---

---

---

---

### Support strategies – some examples

- Oral rehearsal
- Exemplar pieces
- Provide a scaffold
- Modelling the thought processes required to solve the problem
- Paired peer support
- Praise achievements

---

---

---

---

---

---

---

### Four Bs

This is a classroom management idea to deal with large numbers of questions:

- Use your **B**rain
- Look in the **B**ook – or on the **w**eb
- Ask a **B**uddy
- And only after doing these – ask the **B**oss

---

---

---

---

---

---

---

### Break

Please be back in 20 minutes.  
Refreshments are available.

---

---


---


---

---

---

---

 CAMBRIDGE  
International Examinations  
Learn • Discover • Achieve

 Cambridge  
Professional  
Development

### Cambridge teacher support

There are many useful documents available from the Teacher Support Site: <https://teachers.cie.org.uk>

- syllabus
- examiner report
- schemes of work
- example candidate responses
- learner guide.

---

---

---


---


---

---

---

---

 CAMBRIDGE  
International Examinations  
Learn • Discover • Achieve

 Cambridge  
Professional  
Development

### Session 3 – assessment

The objective of this session is to understand the way that candidates are assessed.

---

---

---


---


---

---

---

---

 CAMBRIDGE  
International Examinations  
Learn • Discover • Achieve

 Cambridge  
Professional  
Development

### Understanding the mark scheme

In order to support your learners, it is important to understand the terminology and instructions in the mark scheme.

The way the Mathematics papers are marked is shown on the next slide, it is also outlined in more detail on your handouts.

---

---

---

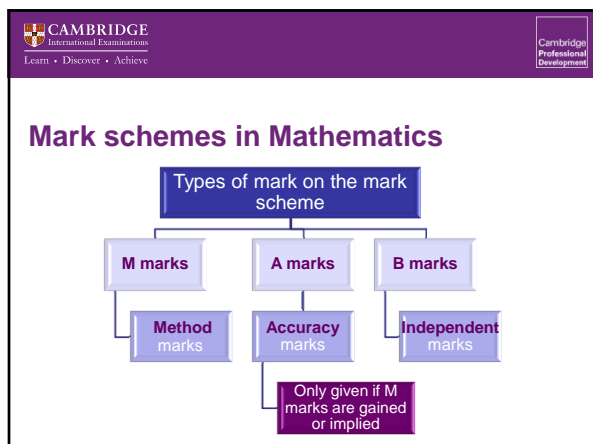
---

---

---

---

---




---

---

---

---

---

---

---

---

**CAMBRIDGE**  
International Examinations  
Learn • Discover • Achieve

Cambridge  
Professional  
Development

### Activity 8 – marking candidate scripts

Mark the scripts in accordance with the mark scheme provided.

We will all mark the scripts from Paper 32 (scripts 1-3). You can then mark the scripts from Paper 42 (scripts 4-6) or Paper 63 (scripts 7-9) depending on the option you take in your centre.

---

---

---

---

---

---

---

---

**CAMBRIDGE**  
International Examinations  
Learn • Discover • Achieve

Cambridge  
Professional  
Development

### Activity 8 – marking candidate scripts

- We will go through the marking of Paper 1 to cover all aspects of applying the assessment criteria.
- We will then all mark the scripts from Paper 32 (scripts 1-3).
- You can then mark the scripts from Paper 42 (scripts 4-6) or Paper 63 (scripts 7-9) depending on the option you take in your centre.

---

---

---

---

---

---

---

---

### Activity 8 – feedback on marking

We will share feedback on script 1 from Paper 32.

The rest of the feedback is available on your handouts.

---

---

---

---

---

---

---

---

### Activity 8 – feedback on marking

Script 1 – Total 60 – Grade A

- 1 correct, the 2 s.f. values of the ordinates is sufficient to gain the first B1 – meets the requirement of the rubric
- 2 correct
- 3 is using the first alternative method. There is a numerical error when the product rule is applied so no accuracy marks, but the method is fully correct.
- 4 correct

---

---

---

---

---

---

---

---

### Activity 8 – feedback on marking

- 5(i) gains full credit because the required justification is actually visible within the deleted work and given BOD.
- 5(ii) and 5(iii) fully correct, with working to sufficient accuracy to justify answer.
- 6(i) does not gain the final A1 as the answer is given in the question, and there are no calculations to justify the statement  
6(ii) gains full credit

---

---

---

---

---

---

---

---

### Activity 8 – feedback on marking

- 7(i) is correct but loses the final A1 because of the additional solutions provided
- 7(ii) gains B2 for the sketch, but this cannot be used to measure the angle, a mathematical process is expected at this level. This is indicated by the word 'Determine' in the question.
- 8(i) correct, the values do not need to be substituted into the formula to gain the A's.

---

---

---

---

---

---

---

---

### Activity 8 – feedback on marking

- 8(ii) loses the final A1 through a simple algebraic slip. The additional term ( $x^3/16$ ) is not required but is not penalised as a M mark
- 9(i) & 9(ii) both correct. Note the level of working for (ii) as Answer Given
- 9(iii) needs to use the properties of the exponential to gain the M1, which is not present. Again as the answer is given, sufficient working needs to be shown.

---

---

---

---

---

---

---

---

### Activity 8 – feedback on marking

- 10(i) correct with clear explanations to justify statement
- 10(ii) starts with an inappropriate process for the plane containing  $l$ , but uses their equations for the plane to compare with the general point leading to a Cartesian equation for the second M1.

---

---

---

---

---

---

---

---



### Session 4 – learning from past papers

The objective of this session is to learn how to use examiner reports to inform your teaching.

---

---

---

---

---

---

---

---

### Activity 9 – analysing reports

Read the Principal Examiner Report and list the key points which you need to inform your teaching and to pass on to your learners.

Be prepared to share your findings when requested.

---

---

---

---

---

---

---

---

### Common errors and misconceptions

The handout shows a list of common errors and misconceptions.

---

---

---


---


---

---

---

---

 **CAMBRIDGE**  
International Examinations  
Learn • Discover • Achieve

 Cambridge  
Professional  
Development

### Activity 10 – using past papers

Discuss ways in which you could use past paper materials in your classroom.

---

---

---


---


---

---

---

---

 **CAMBRIDGE**  
International Examinations  
Learn • Discover • Achieve

 Cambridge  
Professional  
Development

### Uses of assessment materials

- Lesson starter – then revisit as a plenary
- Group work for learners:
  - build a model answer
  - create a mark scheme
  - identify common errors from Principal Examiner Reports
- Use as a formative or summative assessment

---

---

---


---


---

---

---

---

 **CAMBRIDGE**  
International Examinations  
Learn • Discover • Achieve

 Cambridge  
Professional  
Development

### Assessment types

- **Initial** – establishes the base line of current knowledge
- **Formative** – informs both teacher and learner of progress during the course
- **Summative** – summarises and proves the learning at the end of the topic or course

---

---

---


---


---

---

---

---

 **CAMBRIDGE**  
International Examinations  
Learn • Discover • Achieve

 Cambridge  
Professional  
Development

### Useful website

<http://www.assessmentforlearning.edu.au/>

---

---

---


---


---

---

---

---

 **CAMBRIDGE**  
International Examinations  
Learn • Discover • Achieve

 Cambridge  
Professional  
Development

### Lunch

Please be back in 1 hour.

---

---

---


---


---

---

---

---

 **CAMBRIDGE**  
International Examinations  
Learn • Discover • Achieve

 Cambridge  
Professional  
Development

### Session 4 – schemes of work

The objective of this session is to write a scheme of work for the topic, unit or section of the syllabus which was used yesterday.

---

---

---


---


---

---

---

---

 CAMBRIDGE  
International Examinations  
Learn • Discover • Achieve

 Cambridge  
Professional  
Development

### Scheme of work example

An extract from a scheme of work is in your delegate pack, we will now go through this.

---

---

---


---


---

---

---

---

 CAMBRIDGE  
International Examinations  
Learn • Discover • Achieve

 Cambridge  
Professional  
Development

### Differentiation discussion

What is differentiation?

- the process by which differences are accommodated so that all learners in a group have the best possible chance of progressing

How can we do this in the classroom?

---

---

---


---


---

---

---

---

 CAMBRIDGE  
International Examinations  
Learn • Discover • Achieve

 Cambridge  
Professional  
Development

### Useful website

<http://www.bbcactive.com/BBCActiveIdeasandResources/MethodsofDifferentiationintheClassroom.aspx>

---

---

---


---

---


---

---

---



**CAMBRIDGE**  
International Examinations  
Learn • Discover • Achieve



Cambridge  
Professional  
Development

### Activity 11 – scheme of work

Using the template, build a SOW, making sure you include a selection of the following:

- initial, formative and summative assessment
- different teaching approaches
- learning resources and activities
- past assessment materials
- differentiation
- stretch and challenge
- sequencing
- bridging the gap

---

---

---


---

---


---

---

---



**CAMBRIDGE**  
International Examinations  
Learn • Discover • Achieve



Cambridge  
Professional  
Development

### Break

Please be back in 20 minutes.  
Refreshments are available.

---

---

---


---

---


---

---

---



**CAMBRIDGE**  
International Examinations  
Learn • Discover • Achieve



Cambridge  
Professional  
Development

### Session 5 – planning lessons

The objective of this session is to plan a lesson in detail based on the scheme of work started in Activity 11.

---

---

---


---

---


---

---

---



**CAMBRIDGE**  
International Examinations  
Learn • Discover • Achieve



Cambridge  
Professional  
Development

### Planning lessons – structure

- Aims
- Learning Objectives – these must be shared with learners
- Starter, main and plenary if appropriate
- Assessment – initial, formative and summative

---

---

---


---

---


---

---

---



**CAMBRIDGE**  
International Examinations  
Learn • Discover • Achieve



Cambridge  
Professional  
Development

### Activity 12 – planning a lesson in detail

- Plan a single lesson in detail for calculating the scalar product of two vectors and using the scalar product to determine the angle between two directions.
- This links to the syllabus: Pure Mathematics 1, section 6 vectors, points 4 & 5.

---

---

---


---

---


---

---

---



**CAMBRIDGE**  
International Examinations  
Learn • Discover • Achieve



Cambridge  
Professional  
Development

### Session 6 – preparing for assessment

The objective of this session is to understand how to prepare for assessments including:

- advice to teachers
- revision strategies
- approaches to the examination.

---

---

---

---

---

---

---

---

## Advice to teachers

- Check that you are teaching the correct syllabus for the year of the assessment and that all content is covered even if it has not been tested recently
- Check that the module combination is valid
- Check what learners are permitted and not permitted to take into the assessment and practice assessments under these conditions

---

---

---

---

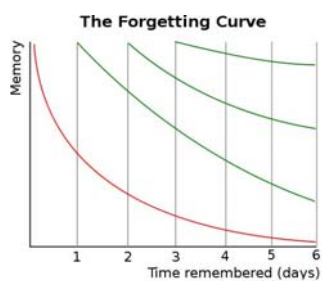
---

---

---

---

## Revision




---

---

---

---

---

---

---

---

## Exam wrappers

Learners record:

- how they prepared for the exam/test
- an analysis of types and causes of errors in answers
- ways in which the errors could be avoided in future

Ebbler, J. (2013, July 31). Exam wrappers. Retrieved from <http://thechalkboardwithchalk.blogspot.com/2013/07/exam-wrappers.html>

---

---

---


---


---

---

---

---

 **CAMBRIDGE**  
International Examinations  
Learn • Discover • Achieve

 Cambridge  
Professional  
Development

### Useful website

<https://www.purdue.edu/learning/blog/?cat=5>

---

---

---


---


---

---

---

---

 **CAMBRIDGE**  
International Examinations  
Learn • Discover • Achieve

 Cambridge  
Professional  
Development

### Revision – ordering responses

- Give your learners three possible responses to a question and asked them to list the good and bad points of each and then place them in order of merit.
- Learners can use this to help them produce better exam responses
- The Example Candidate Response Booklet can be used to provide suitable material

---

---

---


---


---

---

---

---

 **CAMBRIDGE**  
International Examinations  
Learn • Discover • Achieve

 Cambridge  
Professional  
Development

### Revision – peer marking

Use the Example Candidate Response Booklet to find examples for your learners to mark, comment on and discuss.

---

---

---

---

---

---

---

---



**CAMBRIDGE**  
International Examinations  
Learn • Discover • Achieve

**Cambridge Professional Development**

## Revision strategies

There are numerous articles online about revision, a good one is:

- <http://www.bbc.co.uk/news/health-22565912>

---

---

---

---

---

---

---

---

**CAMBRIDGE**  
International Examinations  
Learn • Discover • Achieve

**Cambridge Professional Development**

## Closing the loop

```

graph TD
    Assess((Assess)) --> Review((Review))
    Review --> SetTargets((Set targets))
    SetTargets --> TeachingLearning((Teaching learning))
    TeachingLearning --> Assess
  
```

---

---

---

---

---

---

---

---

**CAMBRIDGE**  
International Examinations  
Learn • Discover • Achieve

**Cambridge Professional Development**

## Further professional development

- For more information about future courses please go to the training events calendar at [www.cie.org.uk/events](http://www.cie.org.uk/events)
- Professional Development Qualification programmes are available locally in approved Cambridge centres. Find details of these at [www.cie.org.uk/pdq](http://www.cie.org.uk/pdq)

---

---

---

---

---

---

---

---

**CAMBRIDGE**  
International Examinations  
Learn • Discover • Achieve

Cambridge  
Professional  
Development

## Reminders – how to keep in touch

Customer services: [info@cie.org.uk](mailto:info@cie.org.uk)

Social Networks

 [www.facebook.com/cie.org.uk](https://www.facebook.com/cie.org.uk)

 @CIE\_Education#cambridgetraining

 <http://linkd.in/cambridgeteacher>

---

---

---

---

---

---

---

---

**CAMBRIDGE**  
International Examinations  
Learn • Discover • Achieve

Cambridge  
Professional  
Development

## Plenary

- Have all your questions on the post-it notes been addressed?
- Are there any questions that still need answers?

---

---

---

---

---

---

---

---

**CAMBRIDGE**  
International Examinations  
Learn • Discover • Achieve

Cambridge  
Professional  
Development

Thank you





---

---

---

---

---

---

---

---