Exam Briefing 2017

Or *Everything you need to know about the exams other than the questions*

Introduction

- *Who am I?*

Chris Hadley: Clerk to the Examiners in 1A (among many other things)

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- *Why are we here?*

To try and make the whole process a bit less scary

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- *Why are we here?*

To try and make the whole process a bit less scary

- *Who are you?*
    - 74 Computer Science   **Papers 1&2&3**
    - 11 Computer Science & NST   **Papers 1&2**
    - 3 Computer Science & SocPsych   **Papers 1&2**
    - 12 Computer Science & Maths   **Papers 1&2**
    - 61 NST   **Paper 1 only**
    - 1 PBT   **Paper 1 only**

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Practical Matters – When?

Computer Science Tripos, Part IA, 2017 - CST0

Thursday 01 Jun	09.00-12.00	MAT0/1	Mathematics Paper 1	**Mill Lane Lecture-rooms**
Friday 02 Jun	13.30-16.30	MAT0/2	Mathematics Paper 2	**Mill Lane Lecture-rooms**
Monday 05 Jun	13.30-16.30	1	Computer science Paper 1	**Corn Exchange**
Tuesday 06 Jun	13.30-16.30	3	Computer Science Paper 3 (new regs.)	**Corn Exchange**
Thursday 08 Jun	10.00-17.00	EART/P	Earth Sciences (Practical examination) (Details will be posted on the Department Notice Board)	**Department of Earth Sciences**
Thursday 08 Jun	13.30-16.30	2	Computer science Paper 2	**Corn Exchange**
Saturday 10 Jun	13.30-16.30	PSIC/1	Physics	**Sports Hall, Cambridge Sports Centre**
Monday 12 Jun	09.00-12.00	MATH/1	Mathematics (Written paper 1)	**Sports Centre Studio, Cambridge Sports Centre**
Monday 12 Jun	13.30-16.30	CHEM/1	Chemistry	**Sports Hall, Cambridge Sports Centre**
Monday 12 Jun	13.30-16.30	PST1/3	Introduction to psychology	**Fenner's Indoor Cricket School, Gresham Road**
Wednesday 14 Jun	09.00-12.00	MATH/2	Mathematics (Written paper 2)	**Sports Centre Studio, Cambridge Sports Centre**

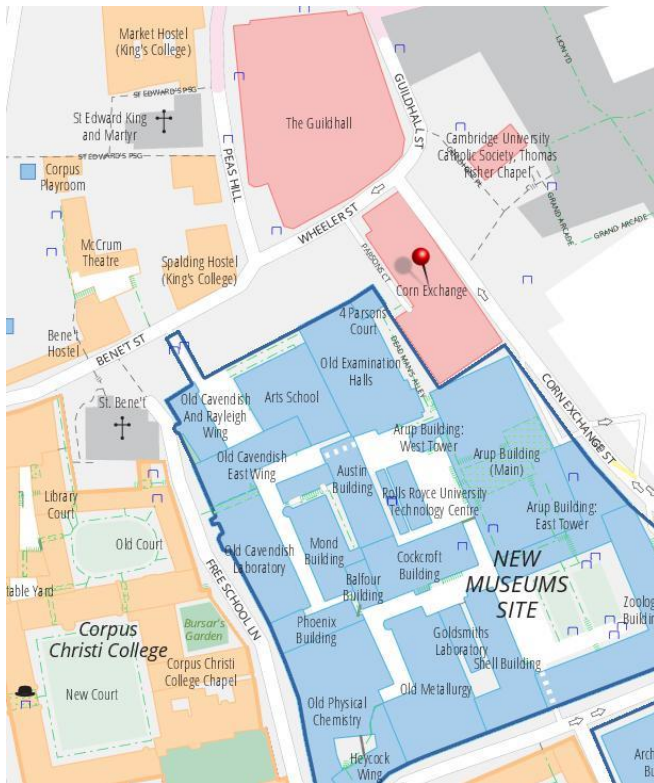Note that this timetable is for CST only, venues may be different for others.

This should have been sent to you on your examination confirmation form (yellow card)

It's at:

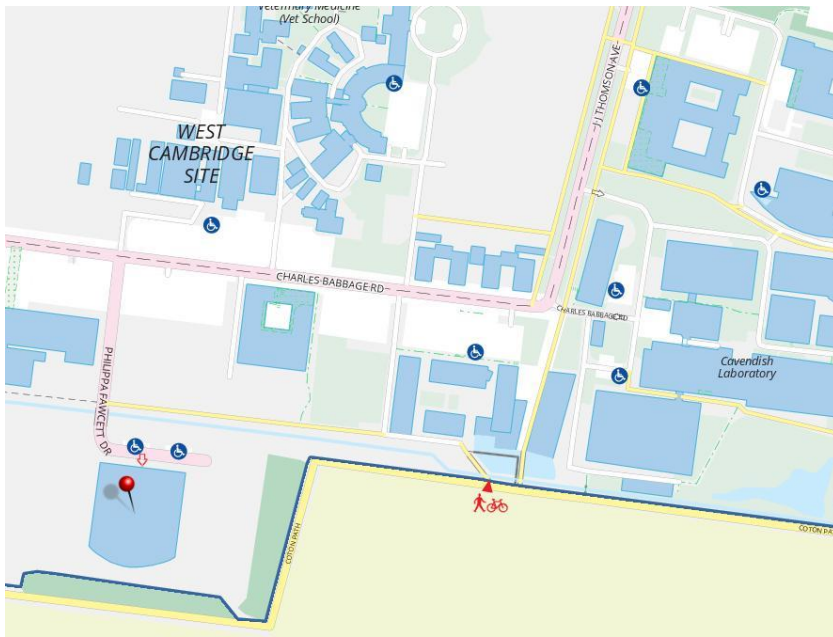www.cambridgestudents.cam.ac.uk/your-course/examinations/all-students-timetable

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Practical Matters – Where?

- Where?   Papers 1, 2 and 3 = Corn Exchange

Practical Matters – Where?

- Where?   Most other papers – Sports Centre

Practical Matters – What?

Part Iₐ: Structure of Papers 1 and 2 in 2017

Paper 1

Section A

Attempt 1 question

1. Foundations of Computer Science
2. Foundations of Computer Science

Section B

Attempt 1 question

3. Object-Oriented Programming
4. Object-Oriented Programming

Section C

Attempt 1 question

5. Numerical Methods
6. Numerical Methods

Section D

Attempt 2 questions

7. Algorithms
8. Algorithms
9. Algorithms
10. Algorithms

Paper 2

Section A

Attempt 1 question

1. Digital Electronics
2. Digital Electronics

Section B

Attempt 1 question

3. Operating Systems
4. Operating Systems

Section C

Attempt 1 question

5. Software Engineering and Security
6. Software Engineering and Security

Section D

Attempt 2 questions

7. Discrete Mathematics
8. Discrete Mathematics
9. Discrete Mathematics
10. Discrete Mathematics

Attempt five questions on each paper.

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Practical Matters – What (for some of you)?

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Part Iᴀ (75%): Structure of Paper 3 in 2017

Paper 3

Section A
Attempt 1 question

1. Databases
2. Databases

Section B
Attempt 1 question

3. Graphics
4. Graphics

Section C
Attempt 1 question

5. Interaction Design
6. Interaction Design

Section D
Attempt 2 questions

7. Machine Learning and Real-world Data
8. Machine Learning and Real-world Data
9. Machine Learning and Real-world Data

Attempt five questions on the paper.

Practical Matters – Who's who?

- Supervisor

- Invigilators & Assistants

- Examiners – only present for 1st 30mins, but you can ask questions after that.

- Proctor (rare)

- (not in the room) Assessors

Practical Matters – Things to take with you

- Id

Practical Matters – Things to take with you

- Id

- Clothes

Practical Matters – Things to take with you

- Id

- Clothes

11. Candidates shall be dressed decently and not in a manner that is likely to create a disturbance in the examination room, or to distract the attention of other candidates.

- Anything else?

Practical Matters – Things *NOT* to take with you

- Mobile phone

Practical Matters – Things *NOT* to take with you

- Mobile phone   -   £50 fine !

- Food

4. A candidate may take a small screw-top bottle of water to his or her desk for consumption during an examination session provided that no disturbance is thereby caused to other candidates. Except with the written consent of the Secretary of the Board of Examinations no other items of food or drink may be taken into an examination room. A Supervisor, Invigilator, or Examiner has authority to deprive a candidate of unauthorized items until the examination session is ended.

Practical Matters – Things *NOT* to take with you

- Mobile phone   -   £50 fine !

- Food

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- Books or papers

- Any means of data storage or retrieval

- Any radio or audio equipment

Practical Matters - Calculators

- You are allowed to take a calculator into

  - Computer Science papers 1, 2 & 3

  - All NatSci papers (except Maths)

  - All Psychology and Behavioural Science papers

- You are **NOT** allowed to take a calculator into

  - Any NatSci Maths papers

  - Any papers borrowed from the Mathematical Tripos

- Approved calculators must be marked by the Department

- Only the following will be approved: Casio fx 991, fx 115, fx 570 (any versions)

Practical Matters – what happens when

- Aim to be outside 30-15 mins early. You may be admitted before the advertised time. (You will be allowed in up to 30 mins late)

- You will only see the exam cover. An invigilator will tell you when you can open the exam paper and start.

- You should read the whole paper before you start writing.

- Allow roughly 36mins per question (180 ÷ 5)

- There will be a 5 minute warning before the end of the exam

- You must stop writing when instructed at the end of the exam.

- You may then fill in the cover sheet (if you haven't already).

- You may leave once your paper is collected. (You may leave earlier but not in the first 30 mins)

Practical Matters – the desk

- On your desk will be:

  - The exam paper

  - A stock of writing paper

  - A stock of clearly marked rough working paper (probably!)

  - A card with your name and examination number, and the number of your desk

  - Some cover sheets

  - Some tags
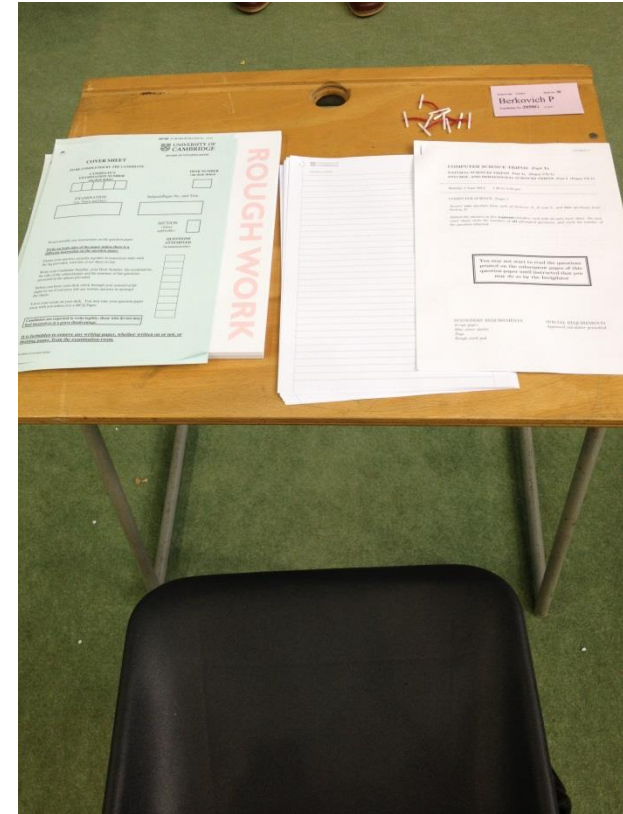
Practical Matters – the cover of the paper

COMPUTER SCIENCE TRIPOS Part Ia

NATURAL SCIENCES TRIPOS Part Ia (Paper CS/1)

POLITICS, PSYCHOLOGY, AND SOCIOLOGY TRIPOS Part I (Paper 9)

Monday 4 June 2012   1.30 to 4.30

COMPUTER SCIENCE Paper 1

Answer *five* questions.

At least *one* question from each section is to be answered.

Submit the answers in five *separate* bundles, each with its own cover sheet. On each cover sheet, write the numbers of *all* attempted questions, and circle the number of the question attached.

You may not start to read the questions printed on the subsequent pages of this question paper until instructed that you may do so by the Invigilator

STATIONERY REQUIREMENTS
Script paper
Blue cover sheets
Tags

SPECIAL REQUIREMENTS
Approved calculator permitted

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Practical Matters – Cover sheet

Practical Matters – Cover sheet

Some people find the cover sheet confusing because the instructions telling you how to fill it in are on the front of the exam paper, NOT on the cover sheet itself. This is because all exams use the same cover sheet, and some subjects want them filled in differently.

To emphasise – **We want a cover sheet per question** (ie 5)

We **do not** want a cover sheet per paper (ie 1), or a cover sheet per section (ie 4)

Please fill in the numbers of *all questions attempted* on **all** cover sheets. This is so we can tell if a question answer gets lost!

Please write numbers legibly on the cover sheet

Also **– don't write your name on your answers or on the cover sheet - candidate number only** (we use anonymous marking)

Practical Matters – Illness/incapacity/mitigating circumstances

- If a problem occurs in the time before the exams that is likely to disturb your revision or performance in the exam itself **tell your Tutor asap**.

  - Your college may submit a "warning letter"

  - The letter will be used as evidence if you apply for an allowance. (Allowances are too complicated to deal with here – your Tutor will tell you what you need to know)

  - If it is a medical matter see a GP as the GP may be asked to provide a note

- If a problem occurs on the day **contact your college Porters' Lodge.**

- If a problem occurs in the exam hall put your hand up and **inform an invigilator**.

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After the exam – What happens?

- Sorting

- Marking

- Checking

- Practical marks

After the exam – Practical marks

Most (or all) of you have gained the full set of ticks – 10 ticks for P1, 10 ticks for P2, 16 for P3.

20 marks are allocated per paper.

So, for example, for P1 that works out at 2 marks per tick.

You also have up to 100 marks from the written paper giving a possible total of 120.

We prefer a mark out of 100, so we scale the written paper marks by 0.8:
$$M = (W \times 0.8) + P$$

After the exam - Norm referencing

A problem: We need to add up the marks on your various papers.

So what's the problem – can't we just add up the raw marks?
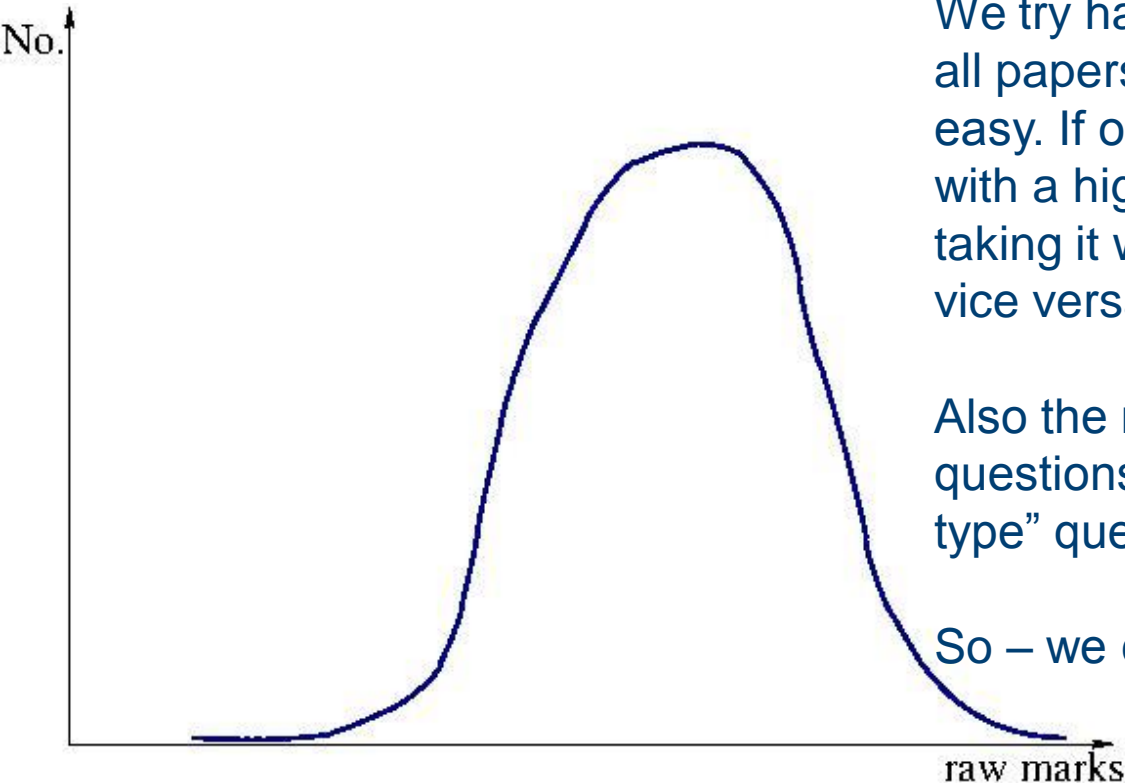
Yes – but it wouldn't be fair.

Let's look at the mark distribution for the whole cohort for a random paper

After the exam - Norm referencing
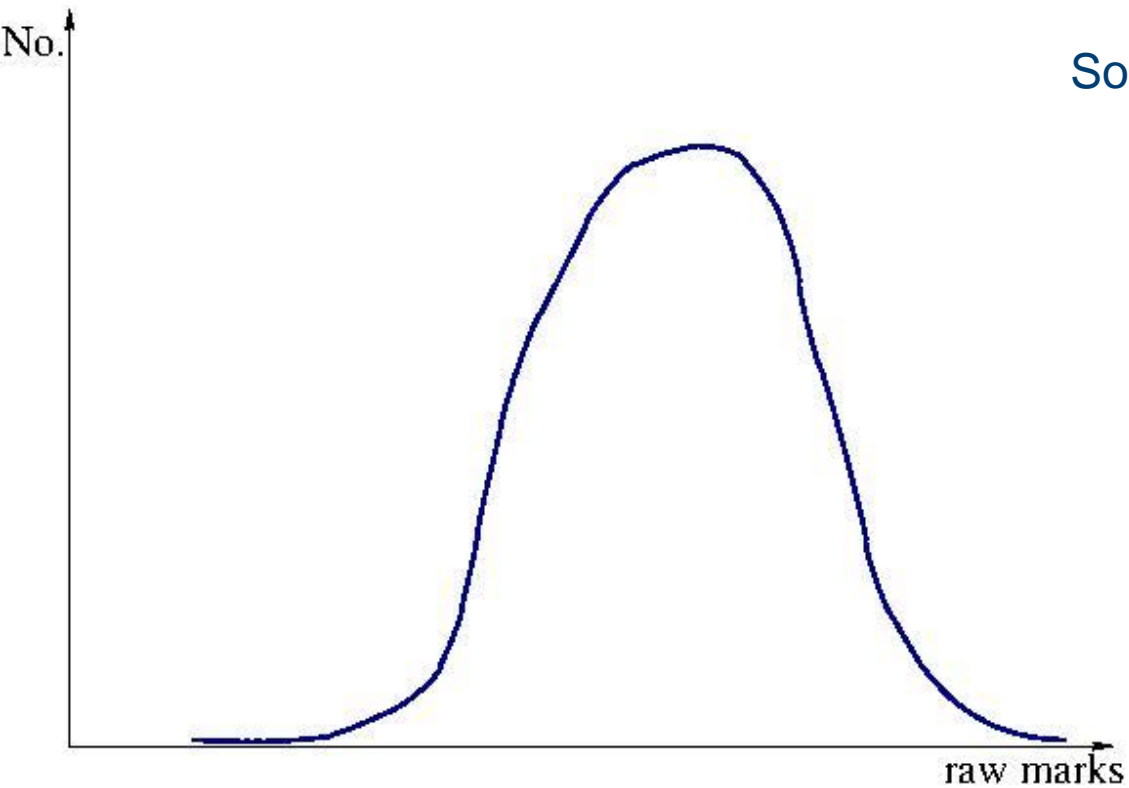
Some distribution a bit like this

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After the exam - Norm referencing

We try hard to make all questions and thus all papers equally difficult, but this is not easy. If one paper turned out to be "easier", with a higher overall distribution, the people taking it would be unfairly advantaged (and vice versa).

Also the mark distribution for "essay-type" questions tends to be different from "maths-type" questions.

So – we can't just add up the raw marks
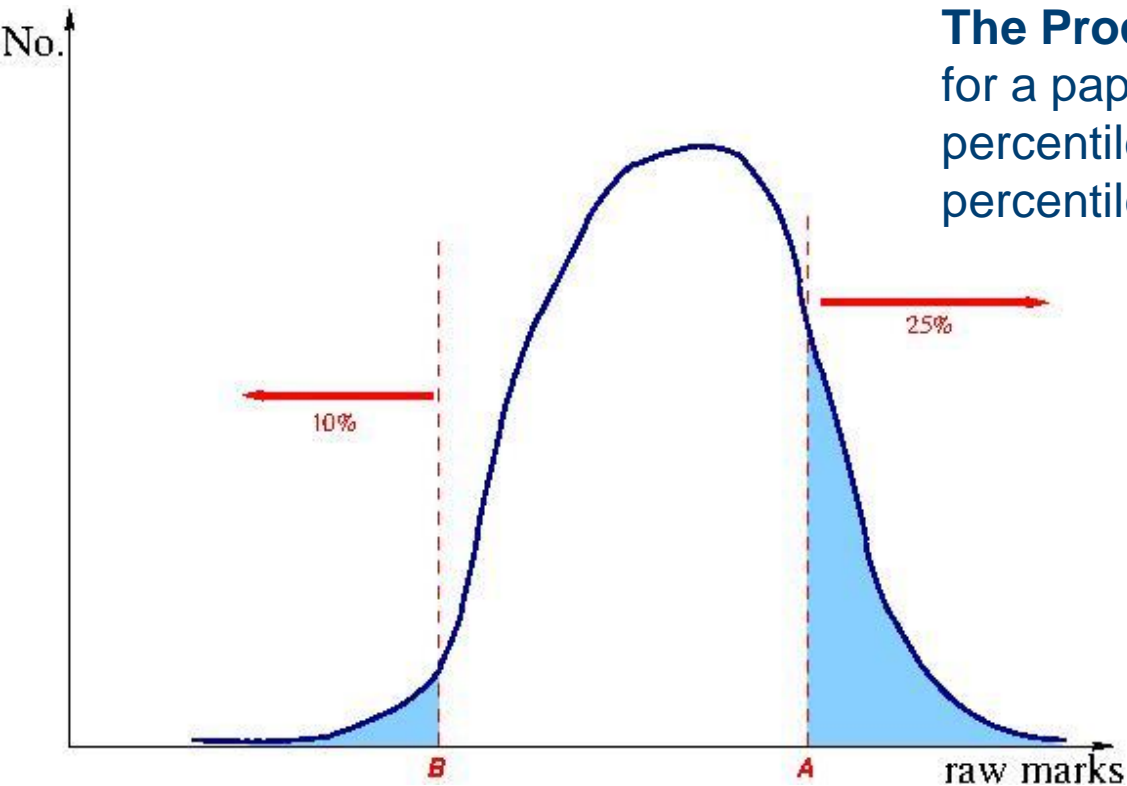
After the exam - Norm referencing
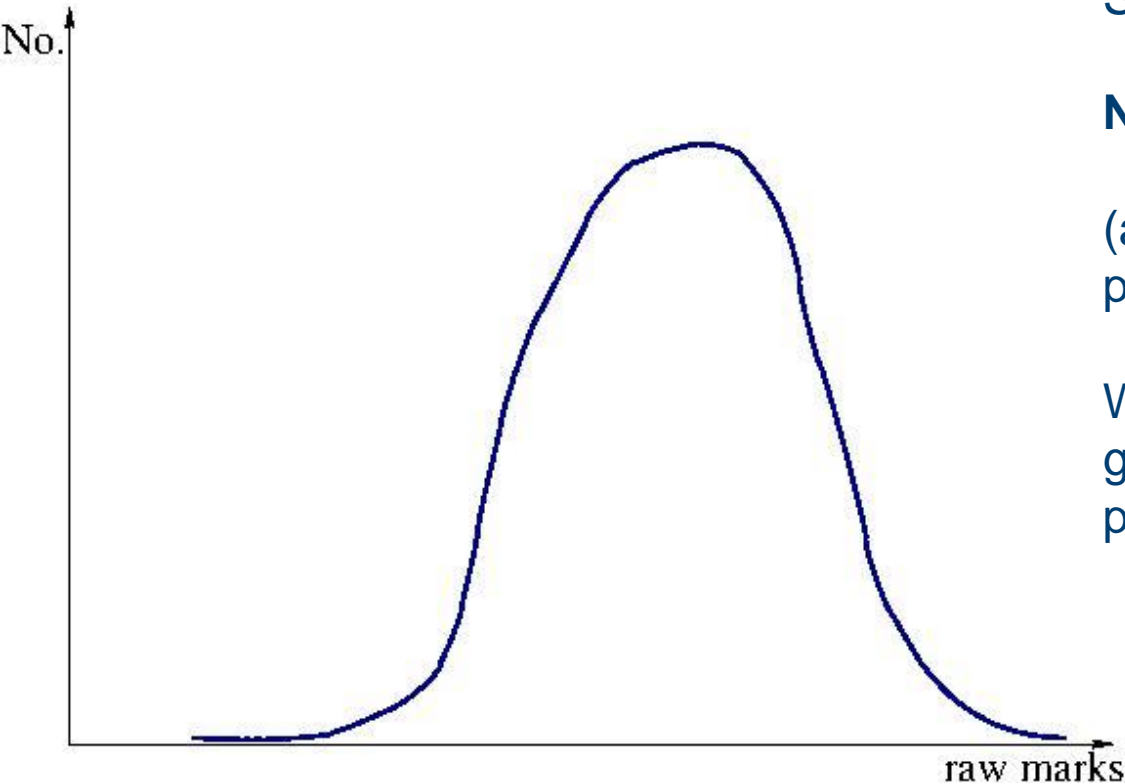
So what can we do about it?

Normalise the paper marks

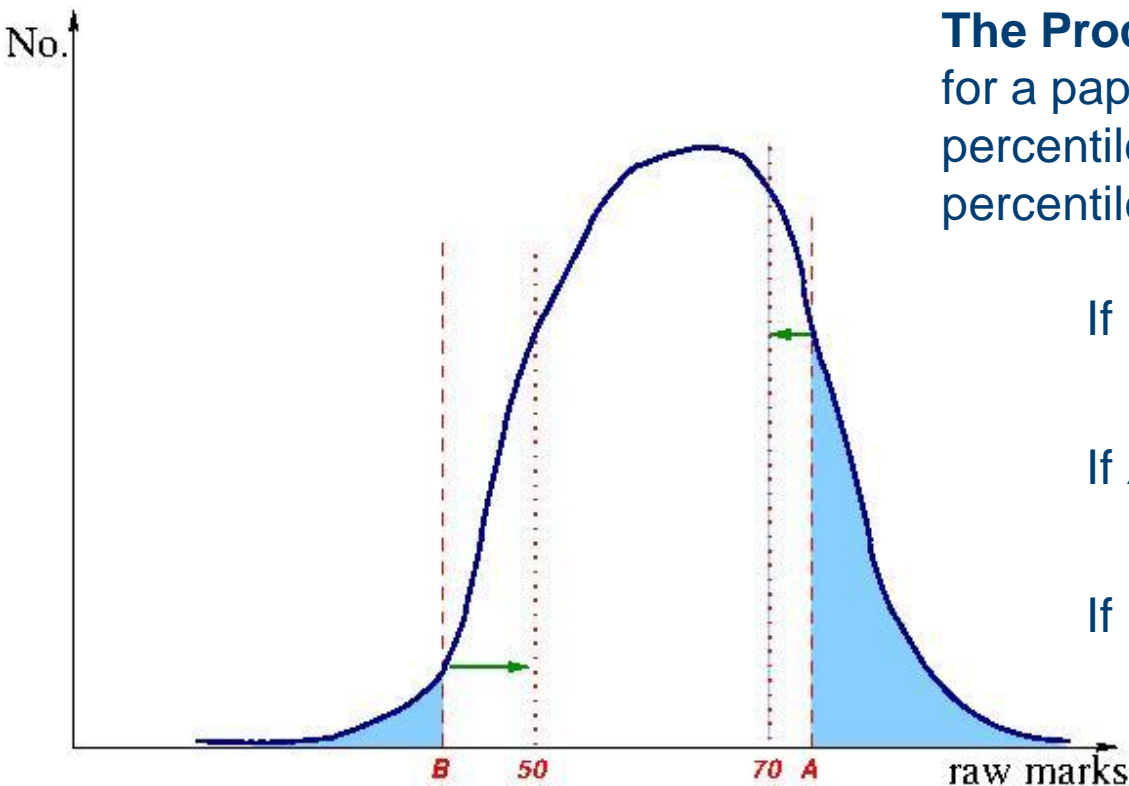(aka norm referencing, aka linear piecewise scaling)

We **decree** that 25% of people **must** get 70 marks or above, and 90% of people **must** get 50 marks or above

The Procedure: From the full set of marks for a paper determine the mark at the 25th percentile, *A*, and the mark at the 90th percentile, *B*.
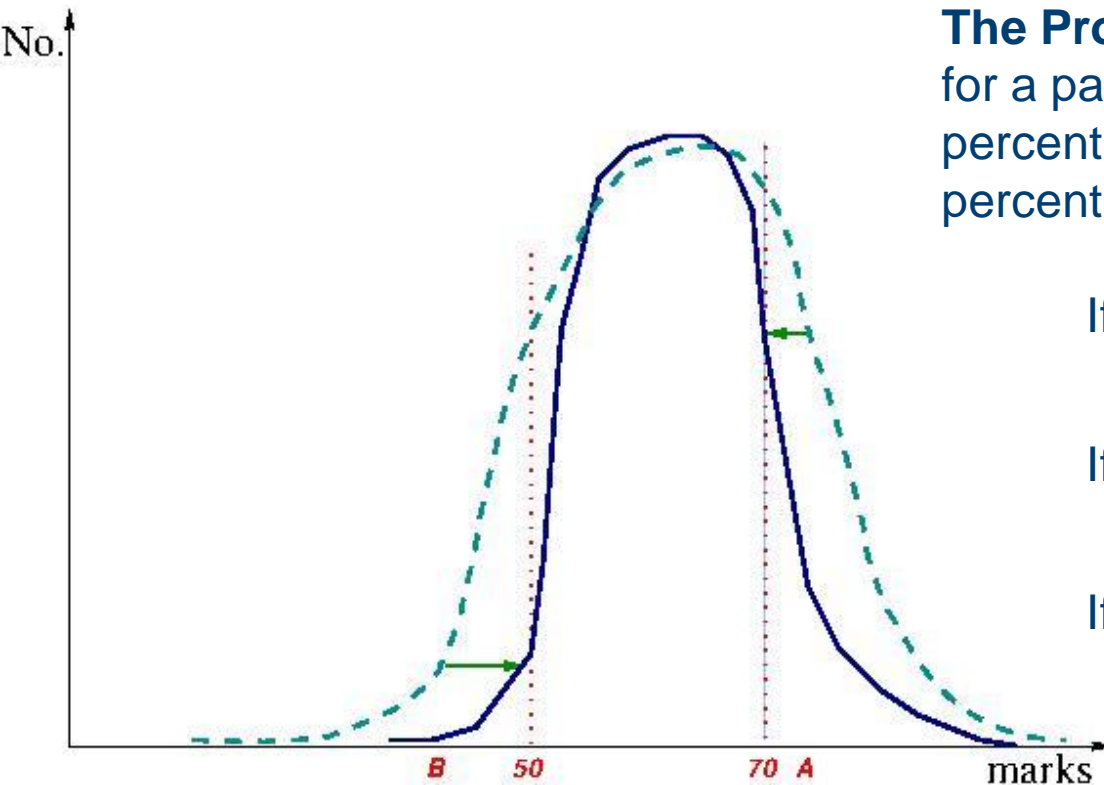
After the exam - Norm referencing

The Procedure: From the full set of marks for a paper determine the mark at the 25th percentile, *A*, and the mark at the 90th percentile, *B*.

If $x \geq A$: $x := 70 + \dfrac{30(x - A)}{(100 - A)}$

If $A > x \geq B$: $x := 50 + \dfrac{20(x - B)}{(A - B)}$

If $B > x \geq 0$: $x := \dfrac{50x}{B}$

After the exam - Norm referencing

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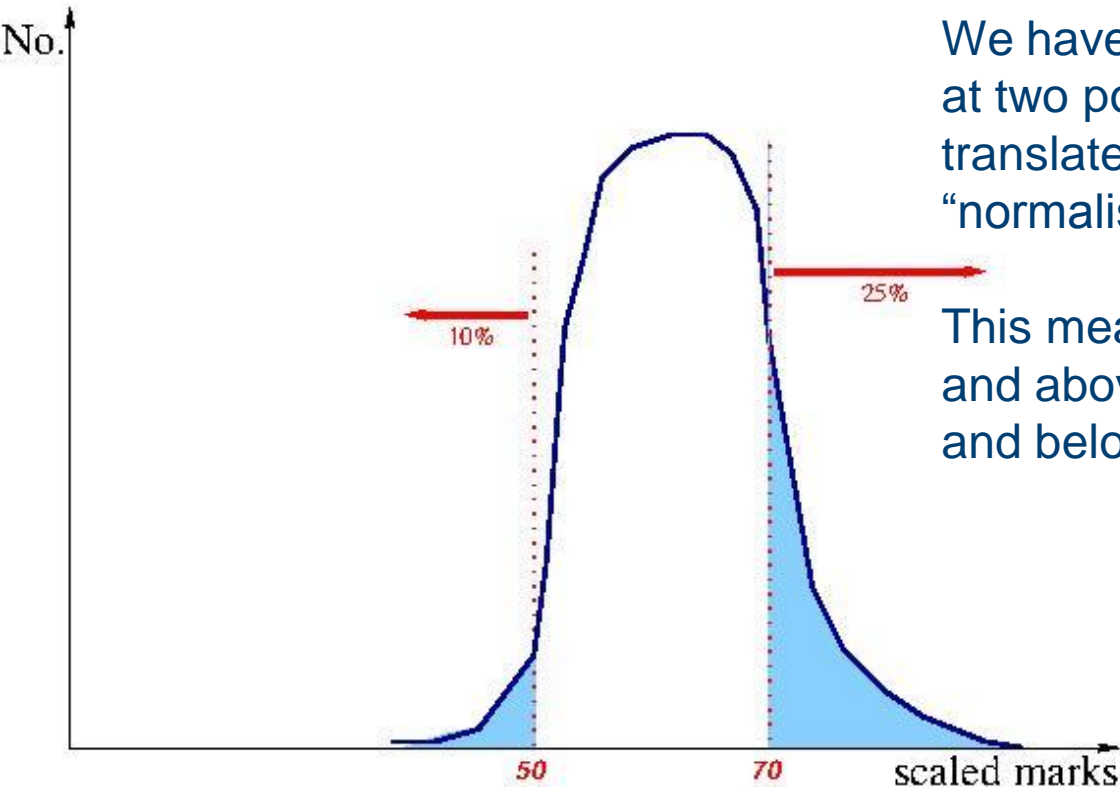
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If $B > x \geq 0$: $x := \dfrac{50x}{B}$

e.g. if *A* = 75, *B* = 37: a raw mark of 80 will become 70+30(80-75)/(100-75) = 76.0,
a raw mark of 50 will become 50+20(50-37)/(75-37) = 56.8,
a raw mark of 30 will become 50.30/37 = 40.5

After the exam - Norm referencing

We have effectively taken hold of our curve at two points and *skewed* (and possibly translated) it to conform to some "normalised" shape.

This means that the top 25% get marks of 70 and above, the bottom 10% get marks of 50 and below.
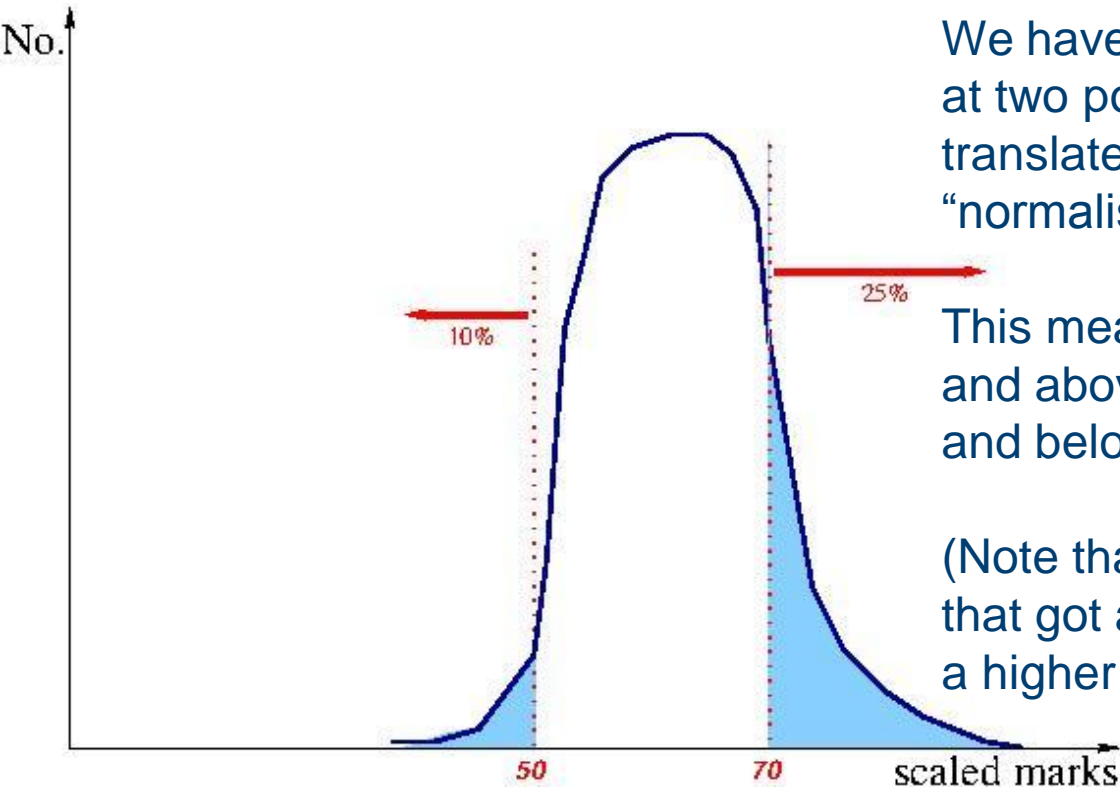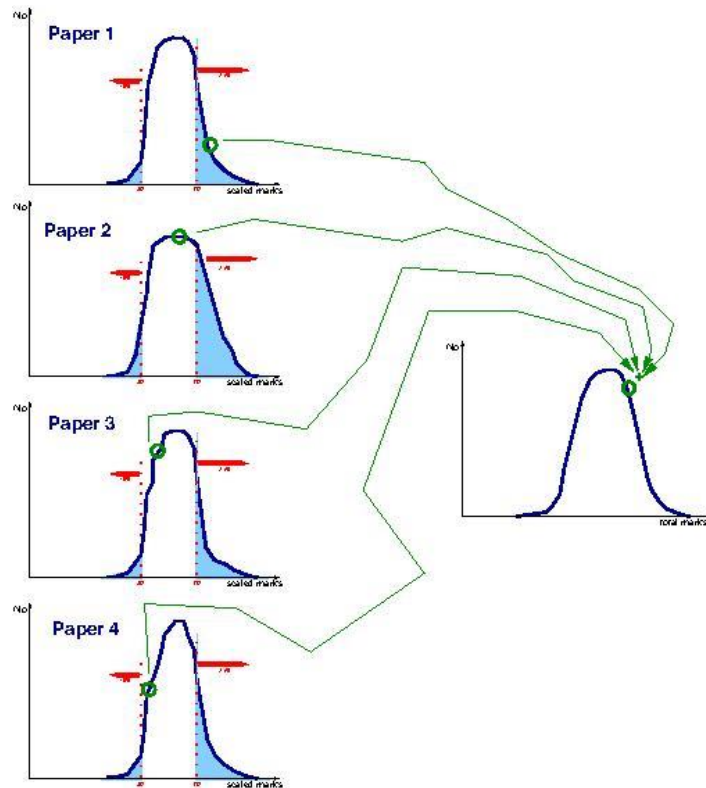
After the exam - Norm referencing

We have effectively taken hold of our curve at two points and *skewed* (and possibly translated) it to conform to some "normalised" shape.

This means that the top 25% get marks of 70 and above, the bottom 10% get marks of 50 and below.

(Note that ordering is preserved, anybody that got a higher raw mark than you still has a higher scaled mark, and likewise for lower)

If this is done on all of your papers **then** we can fairly add together the marks.

After the exam – add up the marks

…like so.

(Note that NatScis don't do this…)

After the exam – What do the NatScis do?

The NatSci Examiners also norm-reference all marks (including ours). This is because people are used to the idea that eg >=70 is a 1st.

However they don't then add them up.

They use the mark per paper to produce a **percentage rank** (ie the top person gets 100, the bottom gets 1).

They then have 4 ranks, 1 per paper, which they add up, and use that rank total to derive a class.

(This is new from 2017)

After the exam – Classing I

We have a total mark, now we need to draw class boundaries

We (CST) follow the rules set out in the Marking and Classing document:

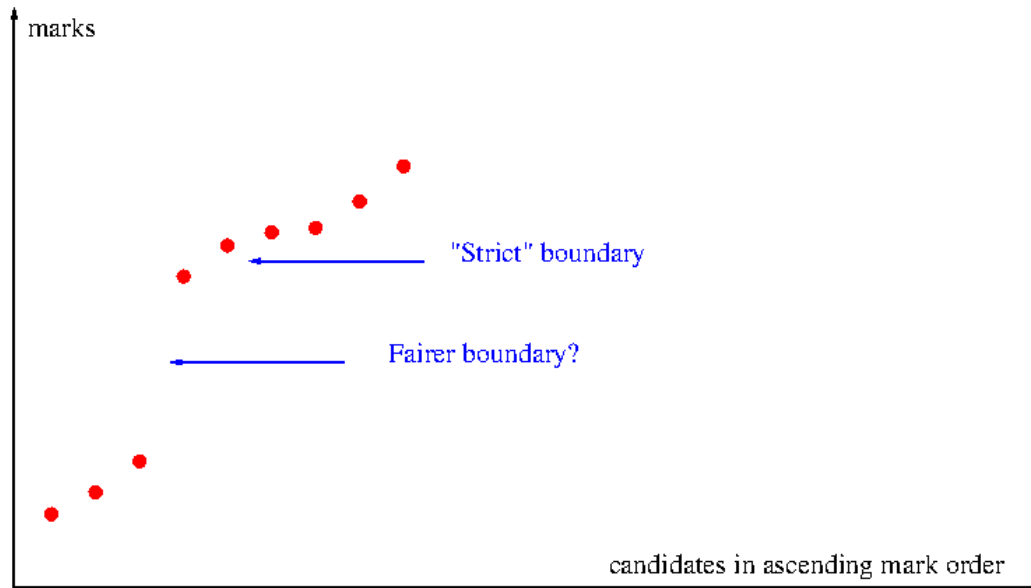www.cl.cam.ac.uk/teaching/exams/classing.pdf

which states that examiners will partition the order-of-merit table thus:

- First   25%

- Upper Second   55%

- Lower Second   12.5%

- Third and Unclassed   7.5%   (unclassed = mark below 40%)

Examiners will actually use graphs like this, scatterplots, to determine the actual class boundaries

After the exam - Results

Computer Science results will be published on Monday July 3rd, in the afternoon.

They will be published on CamSIS.

Initial results will just be the class and paper marks, Directors of Studies will be given more information a day or two later.

(NatScis - different arrangements apply)

The Examination Review Procedure, i.e. Appeals

There is a formal procedure for appeals:

- If you are unhappy about something concerning the conduct of the exam you must contact your Tutor within 3 days of your final paper. An appeal may be submitted which will be dealt with by the Examiners.

- After the classlist is published if you believe a mistake has been made you must contact your Tutor within 1 month of publication. An appeal may be submitted which will be dealt with by the Examiners.

- After either of the above if you are still dissatisfied you (or your Tutor) may appeal directly to the University Registrary within 3 months of hearing from the Examiners.

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After the appeals – Uh oh!

It must be stressed that **very very** few people fail!

Fewer than 1% in Computer Science

The University will not say "You have failed" – it will simply not publish your name in the classlist. However, you may be granted an allowance to remain.

What happens next is up to your college

All will have some kind of internal appeals procedure but unless you are granted an allowance the rules are straightforward and as you would expect.

The regulations do not allow re-sits

Computer Science with Mathematics ONLY

This slide is **ONLY** relevant to people reading Computer Science with Mathematics. If you are not such a person ignore it.

Alphas – we don't use them

You can safely ignore anything your Maths supervisors tell you about Alphas

Paper x	Paper y
15	10
5	10
20	**20**

For the Mathematicians Paper x is better than Paper y. For us they are exactly the same

Computer Science Briefing Lecture

Copies of the slides are available as a PDF at my Computer Lab homepage:

http://www.cl.cam.ac.uk/users/ckh11