Exam Briefing 2014

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

Computer Lab

Introduction

- *Who am I?*

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

- *Why are we here?*

Because previous students requested a briefing lecture

- *Who are you?*
    - 66 Computer Science & NST   **Papers 1&2**
    - 12 Computer Science & SocPsych   **Papers 1&2**
    - 12 Computer Science & Maths   **Papers 1&2**
    - 52 NST   **Paper 1 only**
    - 2 PPST   **Paper 1 only**

Practical Matters – When?

| CST0	Computer Science Tripos, Part IA						
CST0	Computer Science Tripos, Part IA	MAT0/1	Mathematics Paper 1 (MAT0 Paper 1)	29/05/2014	09:00:00	12:00:00	Mill Lane Lecture-rooms
CST0	Computer Science Tripos, Part IA	1	Computer science Paper 1	02/06/2014	13:30:00	16:30:00	Sports Hall, Cambridge Sports Centre
CST0	Computer Science Tripos, Part IA	PST1/3	Introduction to psychology (HPT1 PBS1)	03/06/2014	09:00:00	12:00:00	Corn Exchange
CST0	Computer Science Tripos, Part IA	2	Computer science Paper 2	03/06/2014	13:30:00	16:30:00	Mill Lane Lecture-rooms
CST0	Computer Science Tripos, Part IA	MAT0/2	Mathematics Paper 2 (MAT0 Paper 2)	04/06/2014	09:00:00	12:00:00	Mill Lane Lecture-rooms
CST0	Computer Science Tripos, Part IA	PHO/1	Physiology of Organisms (from NST0) (Written paper)	04/06/2014	09:00:00	12:00:00	Sports Hall, Cambridge Sports Centre
CST0	Computer Science Tripos, Part IA	EART/P	Earth Sciences (from NST0) (Practical examination)	05/06/2014	10:00:00	17:00:00	Department of Earth Sciences
CST0	Computer Science Tripos, Part IA	PSIC/1	Physics (from NST0) (Written paper)	07/06/2014	13:30:00	16:30:00	Sports Hall, Cambridge Sports Centre
CST0	Computer Science Tripos, Part IA	MATH/1	Mathematics (from NST0) (Written paper 1)	09/06/2014	09:00:00	12:00:00	Sports Hall, Cambridge Sports Centre
CST0	Computer Science Tripos, Part IA	CHEM/1	Chemistry (from NST0) (Written paper)	09/06/2014	13:30:00	16:30:00	Sports Hall, Cambridge Sports Centre
CST0	Computer Science Tripos, Part IA	EART/1	Earth Sciences (from NST0) (Written paper)	10/06/2014	09:00:00	12:00:00	Guildhall
CST0	Computer Science Tripos, Part IA	EAB/1	Evolution and Behaviour (from NST0) (Written paper)	10/06/2014	13:30:00	16:30:00	Guildhall
CST0	Computer Science Tripos, Part IA	MATH/2	Mathematics (from NST0) (Written paper 2)	11/06/2014	09:00:00	12:00:00	Sports Hall, 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.admin.cam.ac.uk/students/studentregistry/exams/timetable
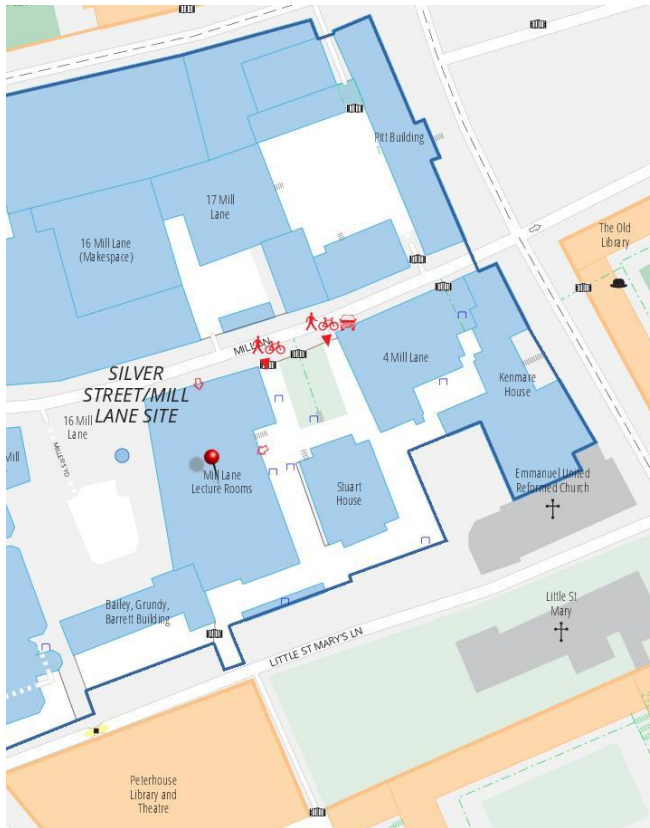
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Practical Matters – Where?

- Where?   Paper1 = Sports Hall, Cambridge Sports Centre
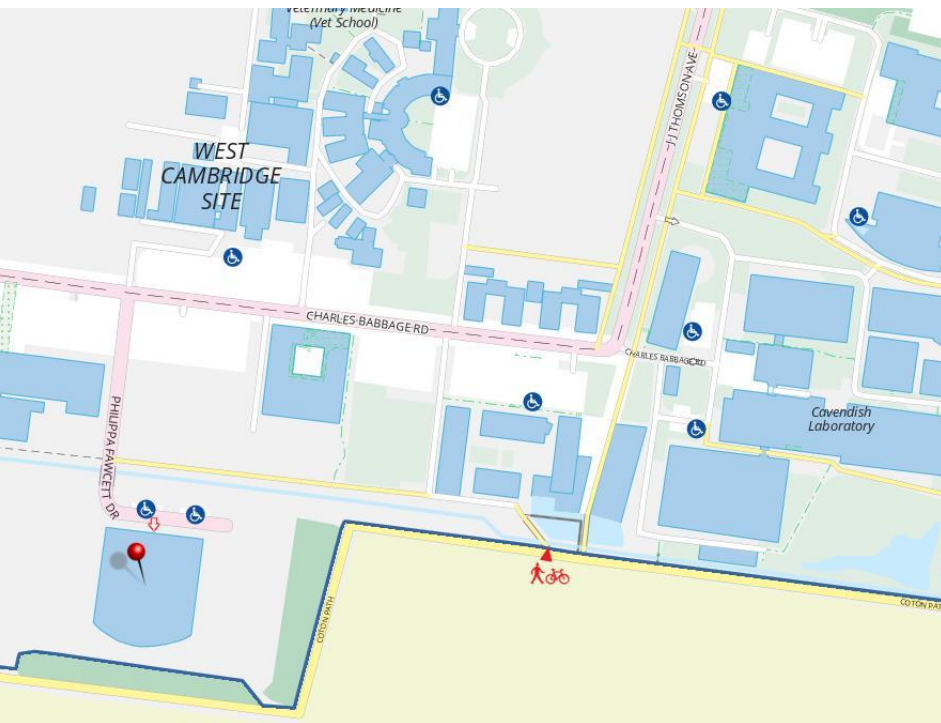
Practical Matters – Where?

- Where?   Paper2 = Mill Lane Lecture-rooms

Practical Matters – Where?

- Other Venues:

  - Titan Teaching Room

  - Pitt Building

Practical Matters – What?

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Part IA: Structure of Papers 1 and 2 in 2014

Paper 1	Paper 2
Section A	**Section A**
Attempt 1 question	*Attempt 1 question*
1. LCP Foundations of Computer Science	1. IJW Digital Electronics
2. LCP Foundations of Computer Science	2. IJW Digital Electronics
Section B	**Section B**
Attempt 1 question	*Attempt 1 question*
3. RKH Object-Oriented Programming	3. IML Operating Systems
4. RKH Object-Oriented Programming	4. IML Operating Systems
Section C	**Section C**
Attempt 1 question	*Attempt 1 question*
5. DJG Numerical Methods	5. AFB Software and Interface Design
6. DJG Numerical Methods	6. AFB Software and Interface Design
Section D	**Section D**
Attempt 2 questions	*Attempt 2 questions*
7. FMS Algorithms	7. MPF Discrete Mathematics
8. FMS Algorithms	8. MPF Discrete Mathematics
9. TMS Algorithms	9. AMP Discrete Mathematics
10. TMS Algorithms	10. AMP Discrete Mathematics

Attempt five questions on each paper.

Students reading Part IA of the Computer Science Tripos take both Paper 1 and Paper 2.

Students reading the Computer Science option in Part IA of the Natural Sciences Tripos take Paper 1 only.

Students reading the Introduction to Computer Science option in Part I of the Politics, Psychology and Sociology Tripos take Paper 1 only.

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Practical Matters – Who's who?

- Supervisor

- Invigilators & Assistants

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

- Proctor (rare)

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   -   £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.

- Books or papers

- Any means of data storage or retrieval

- Any radio or audio equipment

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Practical Matters - Calculators

- You are allowed to take a calculator into

  - Computer Science papers 1 & 2

  - All NatSci papers (except Maths)

  - All Politics, Psychology, and Sociology 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 when you sit down. An invigilator will tell you when you can 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 then leave. (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

  - A card with 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**.

After the exam – What happens?

- Sorting

- Marking

- Checking

- Practical marks

After the exam – Practical marks

Almost certainly almost all (or all) of you have gained the full set of ticks – 20 ticks for CompScis, 10 ticks for others. So for CompScis that's 10 ticks allocated to Paper 1 and 10 to Paper 2 (and obviously just 10 to Paper 1 for non-CompScis).

2 marks per tick = 20 marks per paper.

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
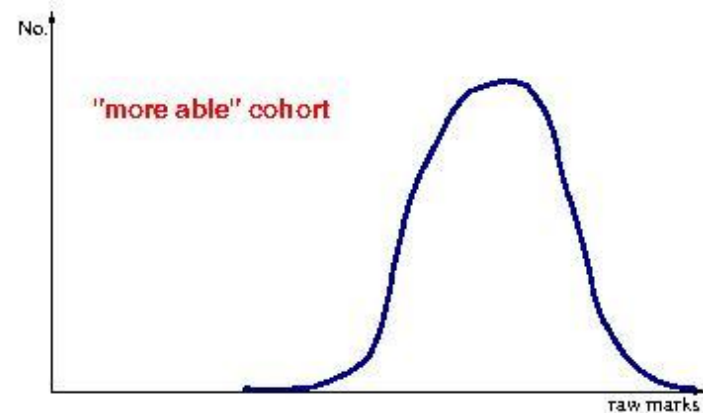
After the exam - Norm referencing
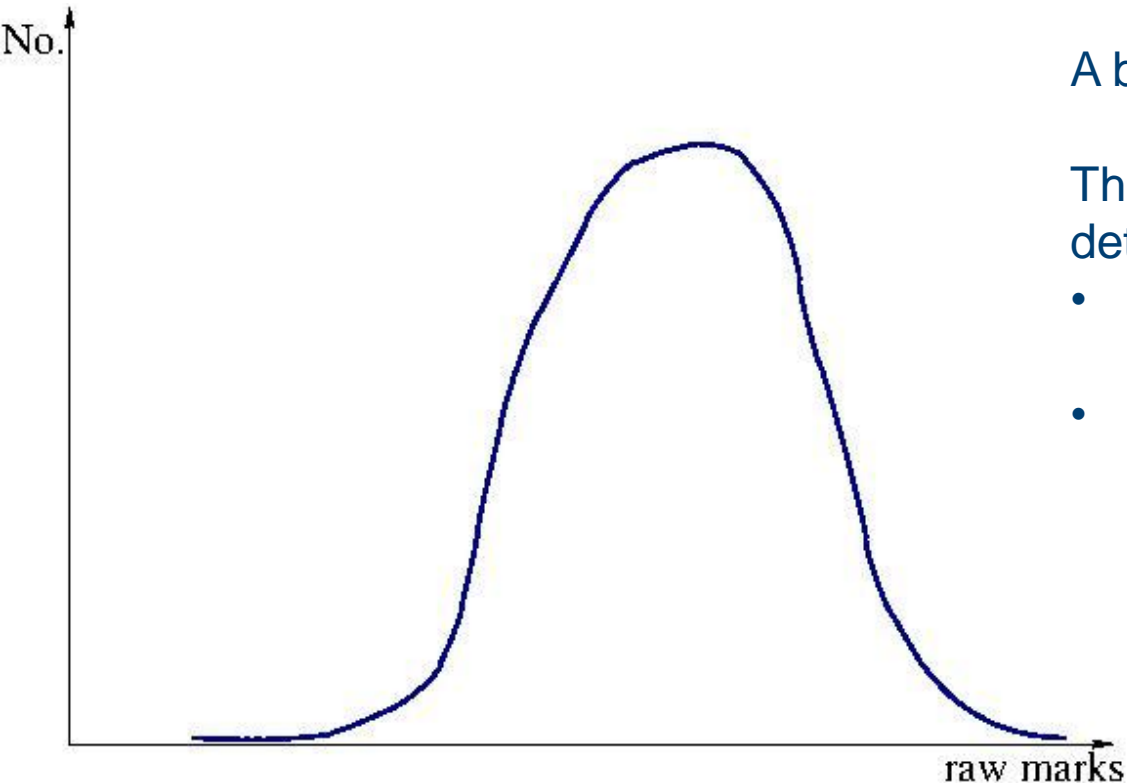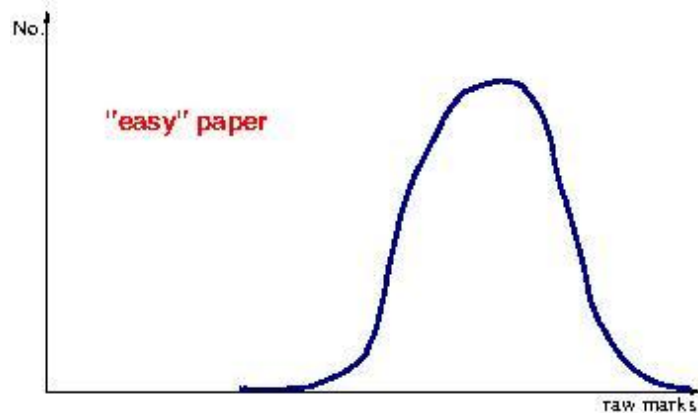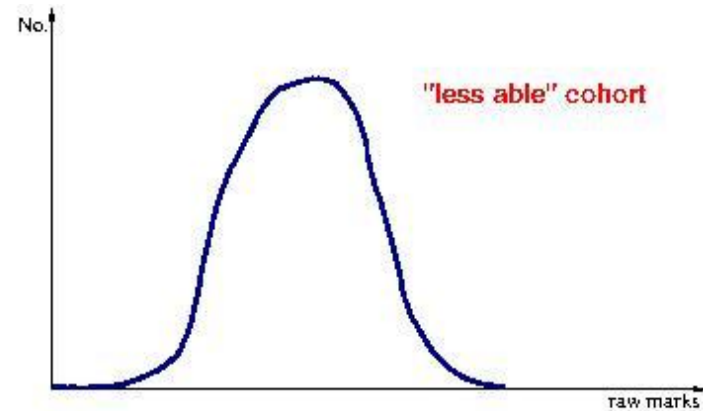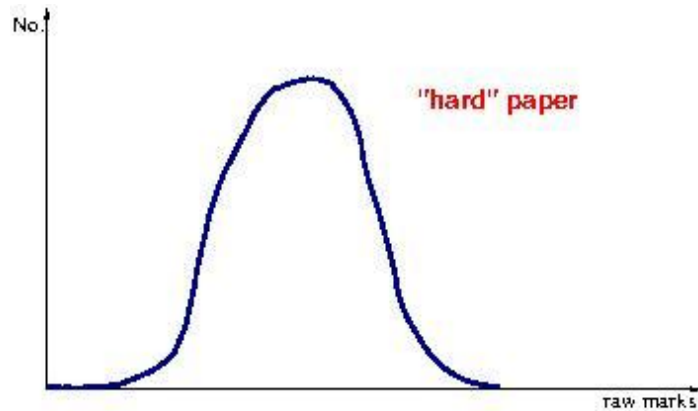

No.

raw marks

A bell curve, or Gaussian

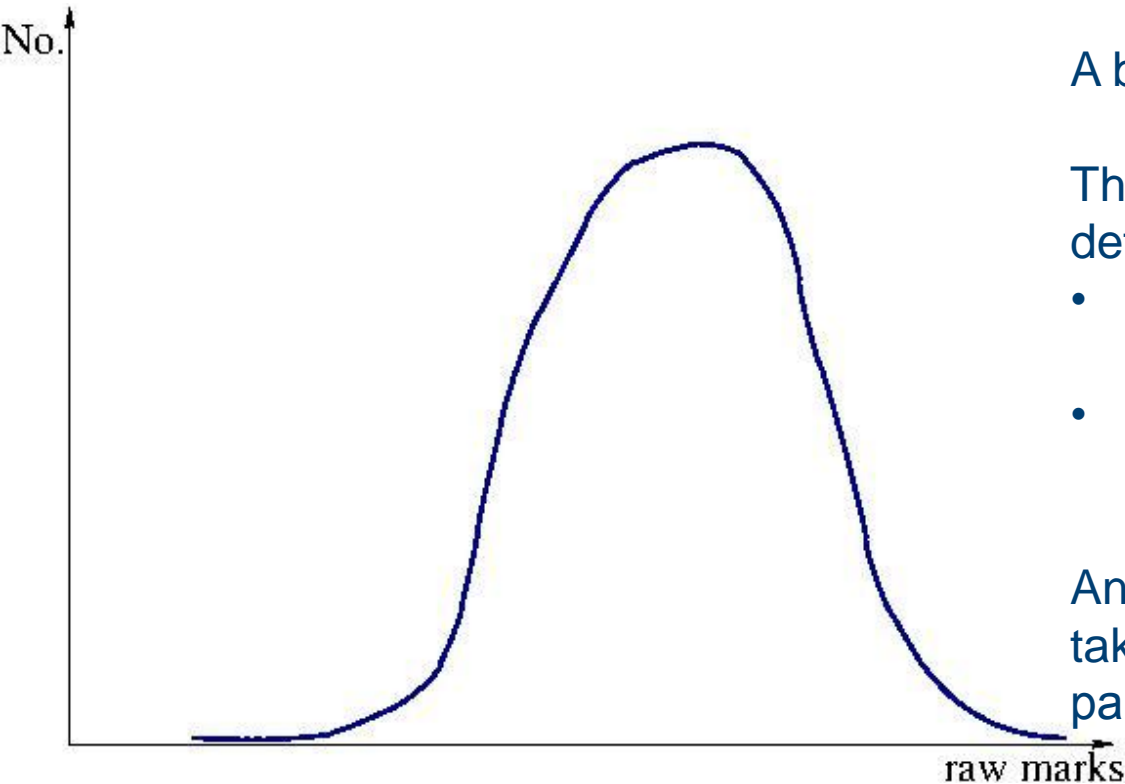There are two variables which determine its shape and position:
- The ability of the cohort (what do we mean by ability?)
- The easiness of the paper (what do we mean by easy?)

After the exam - Norm referencing

Spot the difference

After the exam - Norm referencing

A bell curve, or Gaussian

There are two variables which determine its shape and position:
- The ability of the cohort (what do we mean by ability?)
- The easiness of the paper (what do we mean by easy?)

And you will each have 4 marks taken in different cohorts from papers of varying "easiness".

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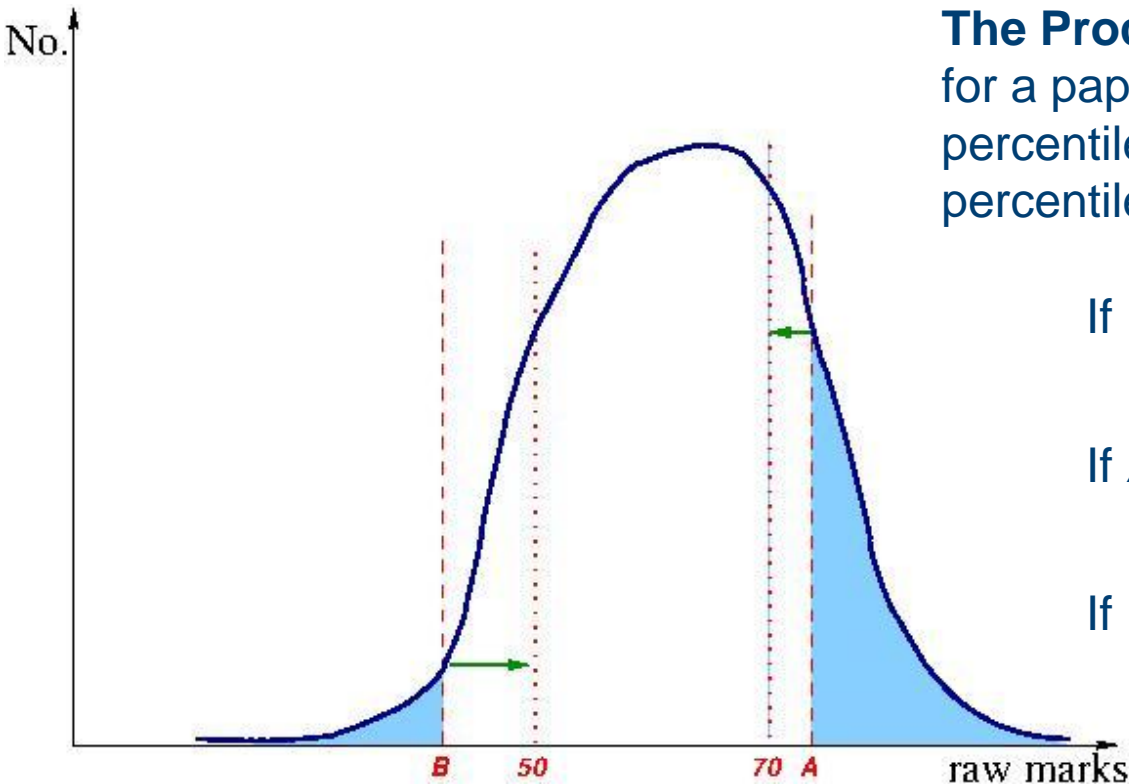# After the exam - Norm referencing
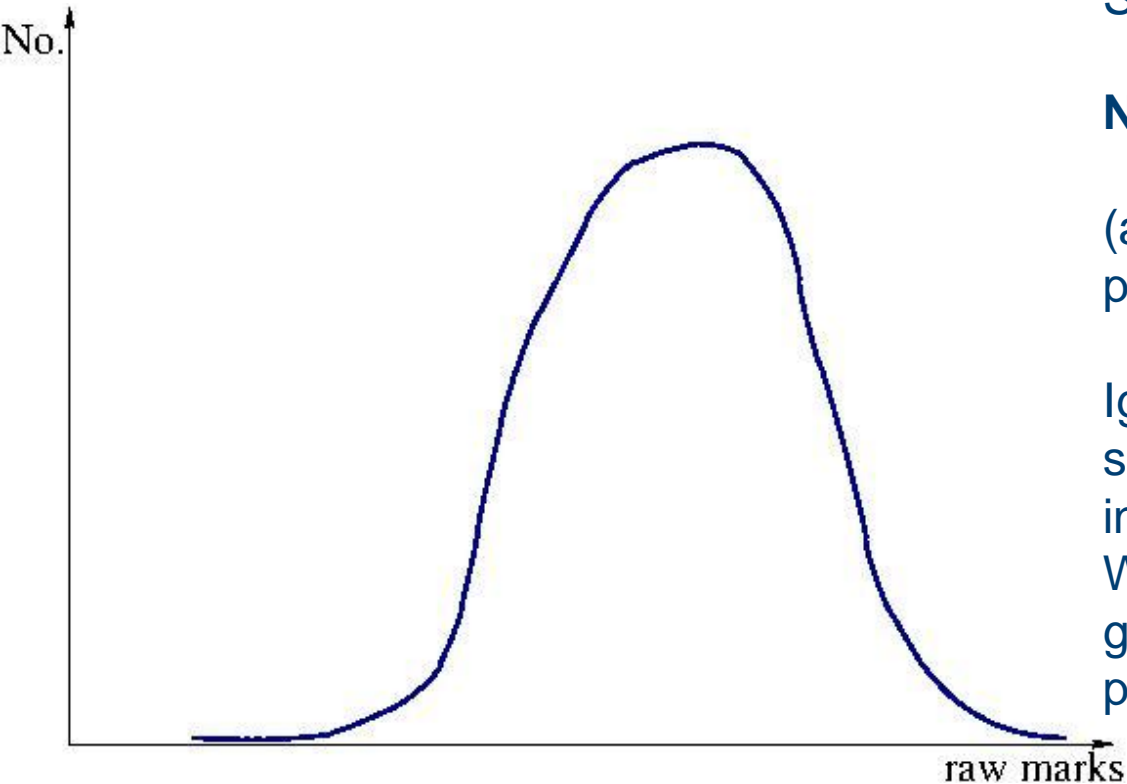
So what can we do about it?

Normalise the paper marks

(aka norm referencing, aka linear piecewise scaling)

Ignore variation in ability for now and say that variability is due to variation in how easy or hard the papers are. We **decree** that 25% of people **must** get 70 marks or above, and 90% of people **must** get 50 marks or above
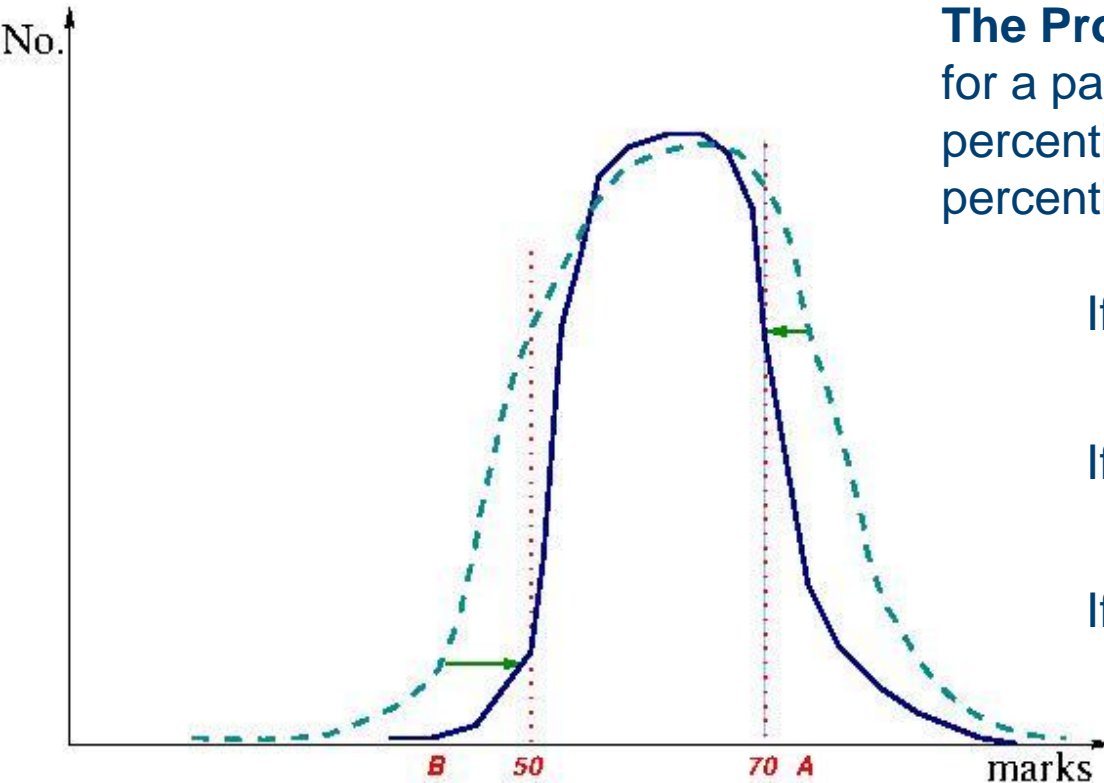
After the exam - Norm referencing

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

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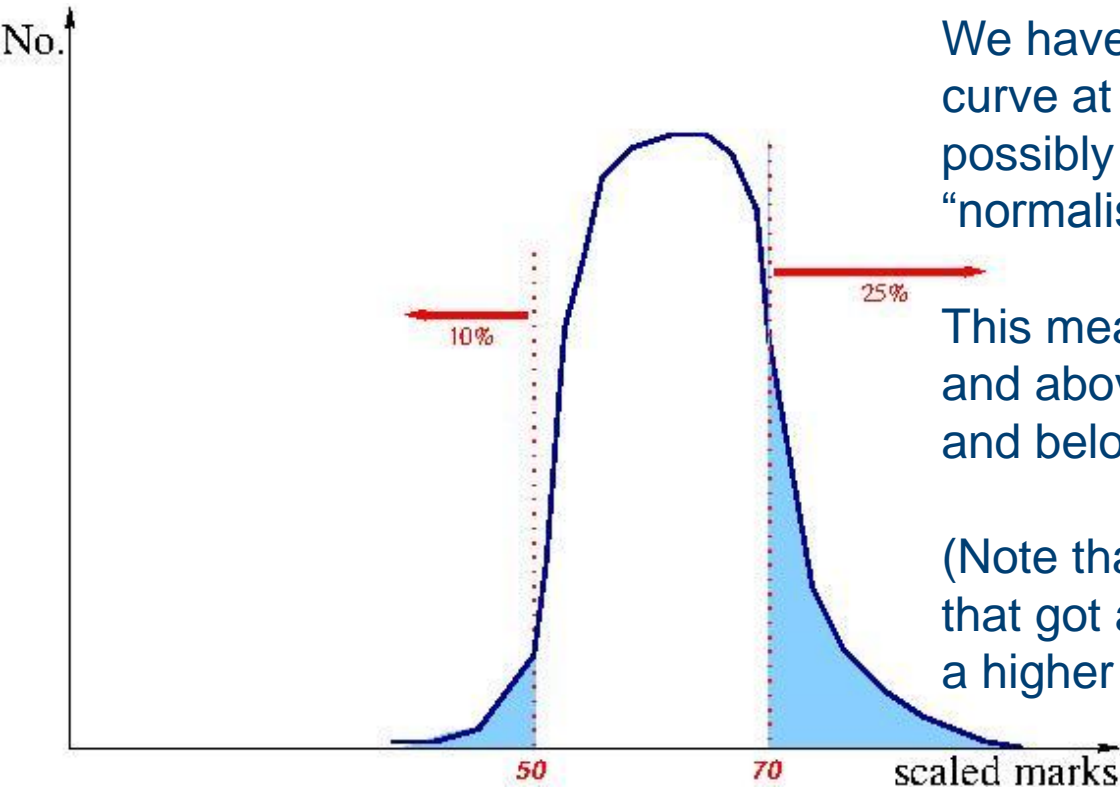
If $x \geq A$: $\qquad x := 70 + \dfrac{30(x - A)}{(100 - A)}$

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

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

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 bell 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
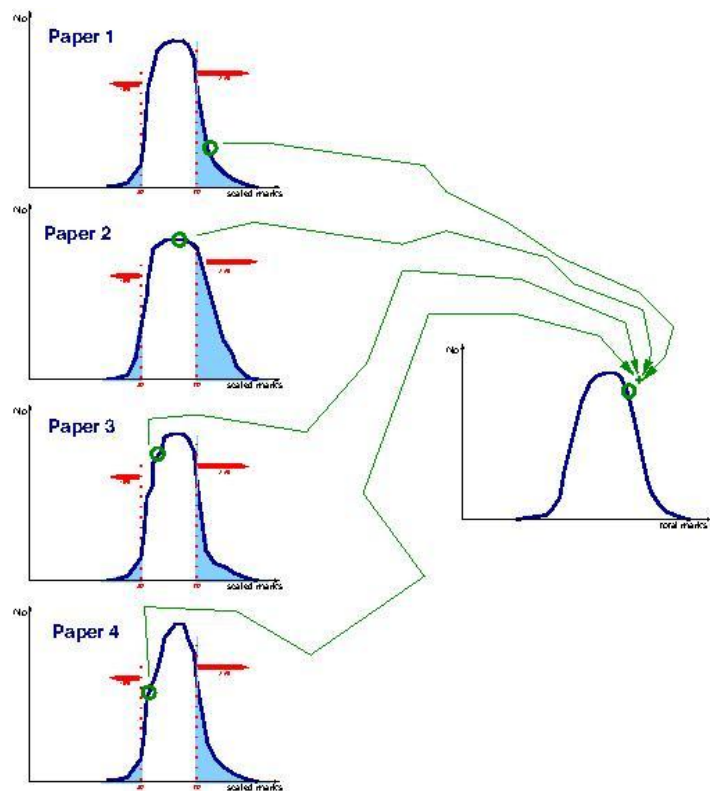
…like so.

After the exam – Maths scaling

…except we don't do that.

There is one further complication – Maths mark scaling

The marks for Maths for Natural Sciences are scaled by 0.75 (why?)

- which gives us a possible total of 375

- which gives us a problem for people who didn't do Maths for Natural Sciences, namely those who read Computer Science & Mathematics.

- So we have no choice but to scale each of their maths paper (normalised) marks by 0.875 so that their total marks can also add up to 375.

After the exam – Classing I

So we have all your marks, now we need to draw class boundaries:

Remember I said "*Ignore variation in ability for now*" ?

- NST follow exactly the same norm-referencing procedure. So we can stick CST students in with the NST students to give a very big cohort (~800 people)

- Axiom: Big cohorts don't vary much in ability year-by-year

After the exam – Classing II

By throwing CSTers in with the NSTers for classing purposes:

i. A given class means the same in CST as NST

ii. The large cohort means that ability is roughly equal year by year, so a given class means the same this year as last year

NST rules say:

1) Below a given total mark will be unclassed

2) Partition the rest of the order-of-merit table roughly 25:35:32.5:7.5 (taking care that people with the same mark get the same class) for 1st:2.1:2.2:3rd

Result = very close to 25% of the complete NST+CST class get a 1st

This does not mean that 25% of CSTers get a 1st !

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After the exam - Results

Computer Science results will be published on Monday June 30th, in the afternoon.

They will be published on CamSIS. The Computer Science classlist will be posted on the Senate House boards, and in the Street at the William Gates Building.

Initial results will just be the class, 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.

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 (see previous slide).

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

KEEP CALM AND PASS EXAMS

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