

# The *Aktua Times*

2010 - EDITION 2



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## Facebook and website

Be sure to keep an eye on our website [[www.aktua.up.ac.za](http://www.aktua.up.ac.za)] and our Facebook group for the latest information regarding events organised by Aktua.

## Aktua Committee



**Samantha Pretorius** Department representative  
**Shaneen Marshall** Chairperson, Sport, Social  
**Jean-Francois Greeff** Editor  
**Bhaavic Chhana** Editor  
**Hetal Kalan** Academics

**Johan Ferreira** Marketing  
**Daleen Swart** Treasurer, IT  
**Lawrence De Jesus** Sport, IT  
**Marianne Behr** Social  
**Bianca Bothma** Secretary

## *Letter from the editor*

Dear Reader

First and foremost, I want to thank Jean-Francois Greeff for the outstanding compilation of prior Actuarial Times editions. I greatly value the support and confidence he has in me and that he has given me the opportunity to be responsible for this edition of the The Times!

Before I get to the details this semester's edition, let me introduce myself: I am Bhaavic and this is my first year of being a part of Aktua as editor. My heartfelt gratitude goes out to the committee for keeping me inspired and motivated throughout this semester as well as making my academic journey an unforgettable experience. A special thank you must go out to Samantha Pretorius for guiding Aktua every step of the way.

So, the anxiously awaited year 2010 has come, left its mark, and is drawing to an end. As mentioned in the previous edition this year, Aktua has had an eventful and sensational semester.

Mind you, the FIFA 2010 World Cup was revived by Aktua when we hosted our own AKTUA Soccer World Cup (I hope you felt it, because it was here... Again) – KE NAKO! Thank you to those students who attended and supported this sporting endeavour. Motivation and exposure is the key to success, hence interesting career expo's and the annual GAAPS actuarial fair that was held. I'm very sure that each of us gained something and feel more prepared and confident to tackle the outside world. The ancient myth regarding actuarial science students has been abolished, this semester with our pizza and bowling night where students enjoyed an evening of frivolous entertainment, great company and scrumptious pizzas. Evidently, we as actuarial science students do not OVER-indulge in our academics but actually lead quite balanced lives.

I can simply say that Aktua has had a GREAT semester and I gather that you are enjoying your evening here at our Aktua ball. As the year draws to a finale, my sincere best wishes go out to all. First years: First year is a joke. Talk to me next year. Second years: I'll give you a pat on the back but whoever promised a sail through 3<sup>rd</sup> year after completing 2<sup>nd</sup> year... LIED. Third years: I salute and congratulate you! We made it [well for some of us 'almost']. I wish you all the success you rightly deserve. Always remember that your qualification will open many doors but its' the finer elements such as integrity and commitment which will help you get inside.

Have a fantastic holiday and hope to see you all again.



***Bhaavic Chhana***

Editor



## *Actuaries for the People*

I was sitting on a plane on my way to Cape Town, and the fellow next to me (who turned out to be a CEO of a JSE listed Construction Company, who studied actuarial science for 3 years) was quite shocked to see me studying Financial Engineering. When he learnt that I was studying actuarial science he proceeded to have many a bad word to say about the profession 'narrow minded' and 'never well substantiated' were some of the terms he used. After spending the entire flight trying to convince him that actuary has developed and grown into a very diverse profession - I was encouraged to further explore the diversity of the actuarial world. This led me to some of the research that is underway in this exciting profession, and I learnt that actuaries are contributing to the world in more ways than you (or at least I) knew.

One of the frightening and notorious truths about the future of our planet, one that is frequently discussed at international Summits, is Global Warming. Yes, the research into this – what seems to be inevitable- natural phenomenon is done mainly by geologists and scientists, but actuaries have been playing a role in this too. On the international front, at the University of Connecticut, research is underway to try to find the present value today of climate change effects predicted to emerge primarily 150 years or more in the future. Thus helping the world to know and understand the severity of this issue and hopefully aid in preventing the damage that it is expected to cause.

Academics at the University of St. Thomas have realised that there has been a growing demand for crop insurance in third world countries to combat poverty among farmers. Farmers in these countries could greatly improve crop yields if they had access to higher quality inputs, such as seeds and fertilizers. However, in order to buy these higher quality inputs the farmers need to obtain loans from microfinance institutions. These institutions are reluctant to extend loans to farmers due to the risk of loan default resulting from crop failure. With increasing abnormal weather patterns due to climate change, the concern for crop failure is on the rise and the need for such insurance is becoming more significant. These students have designed rainfall indexed crop insurance which could greatly benefit the agricultural areas of Africa and around the world.

We all know and have to some extent witnessed the naivety of most of the world when it comes to planning for retirement, the concept of time value of money is not completely understood by the average person and the recent falls in the stock market has eroded the value of savings and pensions of many. Students at the University of Taiwan noticed the shortcomings of purchasing annuity insurances using your retirement fund; the annual payment may be insufficient for daily life consumption, can't be adjusted for any urgent need (liquidity risk), and moreover, if the policyholders unfortunately pass away early, they couldn't leave the rest policy account value as bequest. These students have built a model to save the many people that find themselves in this situation by finding an adequate annuitisation timing and optimal asset allocation for "self-annuitisation" under different investment strategies that can be found according to a time- series of safety level as a utility function for a retiree.

Moving closer to home, ASSA has a multitude of research projects underway, many that have not been released for publication as yet. It is of great admiration that some of South Africa's top actuaries contribute to the research that is done by our society. Probably the most prevalent crisis in South Africa, is AIDS and HIV and the experience and skills of actuaries has lead us (ASSA as well as many PhD, Masters and Honours students) to the forefront of research, obviously not in terms of a cure, but: projections of the number of HIV positive and AIDS sick South Africans, quantifying the contribution of various behavioural and biological factors to HIV transmission, several opportunities for reducing the future incidence of HIV, analysing rates of mortality and morbidity among individuals receiving antiretroviral treatment, and the list goes on. All of this giving South Africa's AIDS research a much needed push in the right direction.

One of the smaller yet expanding areas of Actuarial Science is law. In South Africa, the testimony of Actuaries in our courts under oath is accepted as evidence, this occurs in claims such as loss of support and loss of earnings. One of our very own lecturers Prof. Du Plessis is a member of the research committee of ASSA, his portfolio is damages, and in one of his many projects on the go; he is writing a paper on the guidelines for actuarial testimony in court.

On my expedition to find this information I came across countless research papers, abstracts and presentations. New and old, international and local, too many interesting topics to even begin to expose you to the world of actuarial research. I highly recommend that you delve further into this mesmerizing subject and begin to understand the extent to which actuaries are expanding their horizons and helping the world, it made me incredibly proud to be a part of this profession.

***Shaneen Marshall***



## **Academic Events**

### ***Knowledge is Power***

#### **Career Expo's**

We started the second semester of 2010 by immediately hosting our first Career Exposure Evening on the 21st of July. FNB and PWC AIMS attended, both giving exceptionally interesting presentations. Darryl Lahner, Frances Chevalier and Ross Harris, a 2009 Tuks Graduate which I'm sure many of us will remember, attended from FNB. Their presentation focused on how the National Credit Act influenced their business during the recession as well as how they deal with it using actuarial knowledge and modelling skills. Another interesting point they touched on is how they classify a risky customer by where they swipe their credit card. Not surprisingly, high risk customers used their cards at casinos and low risk customers swiped at Fruit and Veg city and were gardeners. These are just a few examples they demonstrated to us but which influence the company's risk of



profit loss. They then spoke about their Graduate Program and accepted CV's. Colin van Son, David Neale and Corné Conradie, all three Tuks alumni attended from PWC AIMS. Actuarial Consulting is the core of PWC business and the organisation is working towards a global leadership in actuarial services. They specialise in assurance and advisory services for an incredibly wide range of companies as well as for insurers and health services. Actuaries are constantly working on various models and solutions in these fields. This gives any student a broad spectrum of opportunities in the different actuarial fields in order to gain valuable experience and hence ultimately aid them in deciding which field to specialise in. They emphasised what they look for in students; drive, passion, motivation and a full intention to qualify as actuaries.



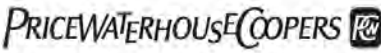
Two new companies to AKTUA Career Evenings were hosted at our Second Career Evening, namely Alexander Forbes Health and PSG Future Wealth. PSG Future Wealth, a relatively new company to the actuarial industry, is an investment solutions firm



which specialise in institutional and retail solutions. Actuaries in the firm focus on how they can incorporate actuarial knowledge into an accounting environment in order to gain the largest profit with minimal risk to the enterprise. Emphasis was made of the fact that, despite what we believe, actuaries do not know everything and do require knowledge from professionals in other departments such as Marketing and Accounting.

Carlyssel and Neethal from Alexander Forbes Health gave us an entertaining yet very enriching outlook on the Health field. It is divided into three divisions: Health Care Consultants/Brokers, Health Management Solutions and Actuarial and Scheme Consulting. Actuary's work extensively involves IAS19 Accounting Valuations which requires reporting for accounting purposes and solutions to employers to reduce/eliminate liability with respect to their medical schemes. They are also involved in Medical Scheme Pricing and Consulting which provides annual increases for medical aids and guidance and support to trustees. They have over 120 valuation performances per year and work closely with the Council for Medical Schemes. AF Health is also involved in their 'African Footprint' *per se* as they have branches in Kenya, Nigeria, Namibia as well as assisting in the setting up of Health Management Organisations and Health Insurers in Africa. Overall, both evenings were a tremendous success and I trust it enlightened you in the choice of which actuarial path to pursue. The Career Expos are a podium for students to gain as much knowledge as possible from companies hence I do encourage and hope to see you all in 2011's Career Exposure Evenings.

*Hetal Kalan*





## ***Sporting Event***

**'Watch out Spain... Aktua will meet you in 2014'**

## **Aktua's road to the World Cup**

Just when everyone had assumed that World Cup soccer fever for 2010 had come to an end on the night of 11 July 2010, the night of the FIFA World Cup final, they were about to be proven otherwise...

A group of remarkable individuals revived the Soccer World Cup spirit on 24 July 2010. They managed to leave their textbooks at home and play some of the most strategic and calculated football

the world has ever seen. They are the participants of the Aktua World Cup Soccer Tournament of 2010.

LC De Villiers soccer fields hosted the tournament between the 9 Actuarial teams who played it out on a day that was filled with entertaining football and enthusiastic support. The Aktua hamper for best dressed and most enthusiastic was awarded to the all girls team of Ivory Coast, who dressed the field with energy and laughter which added much AYOBAness to the day.

The final of the tournament was closely fought between teams Korea DPR and Zimbabwe and it boasted football of an elite standard. The eventual winners of the tournament were team Zimbabwe who walked away with gold medals, the Aktua soccer hamper and were awarded the Aktua Sports Trophy.

The tournament was a wonderful combination of competitive and relaxed social soccer and gave the participants joy-filled memories, strengthened friendships and free energy drinks!

***Lawrence De Jesus***





# Aktua's road to the World Cup



## *Interview (Ever wondered W<sup>3</sup> : Who, What & Why...)*

### **Background:**

**Full Name:** Regard Budler

**Date of Birth:** It feels long ago

**Family:** Wife Tanja and Mai (our Labrador Puppy that believes that grass is not something that should be on a lawn!)

**Position at UP:** Lecturer for AKM705 and IAS382



**Qualification:** BSc (Hons) at Tuks. I have done my Fellowship in Life Insurance (SA2).

### **Interview:**

**Most people are aware that any qualified actuary is very busy and under a lot of pressure. What motivated you to remain involved in academia whilst maintaining a position at Momentum?** I have always enjoyed working with people and getting out of the office now and again reminds me that there is life outside the office. I think that you will only be as busy as you decide to be. Yes, it is not always easy to split yourself between different worlds, but I do believe with proper and advance planning you can do it. There is a difference in life between being busy and being productive. I try to be productive and not busy as such.

**Which career would you have pursued if you did not become an actuary?** I suppose like most of us, I did consider other "high-profile" professions, like accountant, doctor or engineer. I would have probably gone down the medicine route – humans are an interesting species!

**What is your favourite past-time?** Past-time???? No just kidding, I do try very hard to make time and maintain a healthy balance. Trust me, if you don't, you will not be able to reach your goals. I do not think that the human body was designed to sit behind a PC for 12 hours a day. Therefore, I play a bit of squash; I keep up my golf game just to make sure I get those corporate invites to the golf weekends (thanks Momentum!) and lastly I try to make time to do a bit of mountain biking and road cycling. And of course Tanja and Mia must be my absolute favourite past times!

**Do you have any bad habits?** Has your paper budget gone up? My boss told me that I have the habit of saying "ok" in presentations after every single point. I think in class I might irritate people by saying things are "easy" when they might not actually be. Let's leave it there...

**What was your favourite cartoon as a child?** I actually recall “Sinbad the sailor” and “Moo min” – yes, you know it, it was good stuff!

**Which rugby team do you support?** I suppose this is a uniquely defined answer given that there is only truly one proper rugby team, a.k.a. the Champions!

**What is the phrase or quote which you live by?** “Just do it!” and “Live your purpose!”

**What did you do between lectures as a student?** We usually had some fascinating discussion on the interrelatedness of the Riemann-Stieltjes integral and n-th degree Newtonian polynomials as a basis for decision making in a non-discrete quantitative risk-neutral probability space – i.e. we ate Chelsea buns!

**Which exemption modules or exams did you find most difficult?** Prof du Plessis made sure that I spend a few holidays next to the pool with my IAS282 (CT1) Q&A bank. Ooo, happy days! Actually ST6 (Derivatives etc), was the most difficult exam and subject.

**What is your opinion regarding furthering one's studies by doing an honours and/or masters degree vs. entering the working environment?** I highly recommend a honours – most of you know this by know! An honours has a few benefits like:

- You will most probably qualify much quicker
- The input and discussions with lecturers are invaluable when it comes to being apply to apply your knowledge in the “real-world”
- The honours project enables you to step into the working environment and immediately start apply your knowledge and skills
- The honours should be seen as an invaluable networking opportunity.
- An honours gives you the opportunity to further enhance your studies –even if at a later stage in your career – fancy that title doctor?
- I've played the most golf in my life in honours – classes are only in the evenings.
- Having an honours gives you access to much cheaper life insurance and short term insurance. The banks also look at you differently and you will most likely get a lower interest rate when you buy your first car.
- You will be paid more
- People with honours' degrees stand out head and shoulders over the rest of the staff when it comes to performance. They also tend to excel much quicker in their careers.

**What was the biggest adjustment for you when you entered the working environment?** Well, working! I think you quickly realise how much freedom you had as a student, and how it feels if that is gone. My first week felt like forever! Luckily you get used to it quite quickly, and it is really fun when you start realising that you can make a meaningful contribution.

**Upon completing your BSc(Hons) in Actuarial Science, you were one of the top achievers in your class. Which awards did you receive?** I am now running a serious risk of exposing my social life as a student. The ones that I recall are:

Chancellor's Medal

Top student

Sanlam Prize, Munich Re Prize, ABSA Prize, Outsurance Prize.

**What advice can you provide current students pursuing a career in actuarial science?** Enjoy the journey and always try to ask why why why... Don't give up, the road is not as long as you think, and of course, my favourite saying in class: "Do all the past papers!"

*Marianne Behr*

TURING TEST EXTRA CREDIT:  
CONVINCE THE EXAMINER  
THAT HE'S A COMPUTER.

YOU KNOW, YOU MAKE  
SOME REALLY GOOD POINTS.

I'M ... NOT EVEN SURE  
WHO I AM ANYMORE.



## ***Uit Agie se Magie***

***English subtitles: the column to express your sanity***

### ***First Year***

What's your major? Oh really? That sucks. Mine is Actuarial Science.

It is hard to believe that most of us would say those words after almost a year of continuous suffering and sole reassurances that it will only get harder; but this is when we should be saying them. We have endured math course after math course, and if stats and computer programming last semester wasn't enough, the 'statistical programming' these last few months sure takes the cake (yet we're still here). Either because we really have a penchant for abuse, or we are actually really good at maths or because we truly love what we do.

No matter the reason, being with people that think the way you do inspires you to push harder and go further than you ever thought you could. Even when things go a little out of control it's easy to just 'POP' in a little something to make it alright again. Next time you need to take binoculars to a numerical analysis lecture or find out that the exact value of a pi is R8.50 - just remember, each day holds amazing surprises and sometimes you need to slow down, linger a little and recognize them.

All the best. May next year be everything you wish it to be.

***Bianca Bothma***

### ***Second Year***

2<sup>nd</sup> year, 2<sup>nd</sup> semester – halfway through our degree! (Hopefully) For once we feel what it is like to be a normal student and to only have to pass most of our subjects (no more 70% for IAS or 60% for calculus). But, as 'not so normal' actuarial students we do still envy some of the other faculties where they get study leave and complete semester tests within one week, leaving them lots of social time during the rest of the semester.

At least we still have some fun in class. Ask any Afrikaans student what comment a lecturer would make if an 'unknown' student jumps out of the closet in an 'unknown' class and scares the 'unknown' lecturer! And we really can't complain about them, sometimes they are even nice enough to put the practical, together with the memo, on clickup. I just can't figure out how the memo can only get 8.5/10 though... We might forgive the UP calendar one day for making sure that we wrote a semester test almost every week. As of next year we don't look forward to a Spring break that much. Also, we did not know that a synonym for Spring is study, but luckily we're not that ignorant anymore!

Until Valentine's Day 2011 for our first 3<sup>rd</sup> year classes (apparently a nightmare according to the most not [strictly positive] third years), goodbye!

***Daleen Swart***

### Third Year

PAST PAPERS, past papers, past papers. What else is there to say? It feels to me as if this is what my life has become, a one point void between two words.

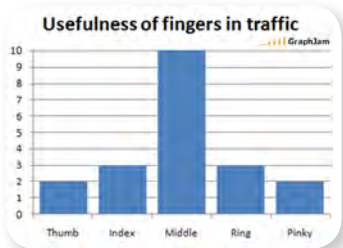
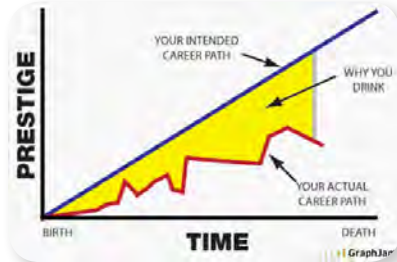
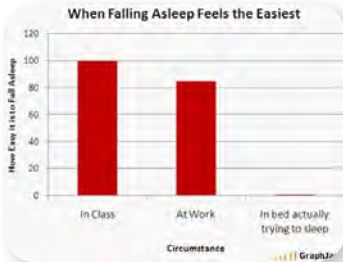
Don't get me wrong, there definitely is a lifetime worth of other interesting side notes to mention. Romances that seem to bloom out of the desolate cracks in our unyielding schedules, the odd drink-until-you-drop-because-you-might-not-get-another-chance-soon twenty-first birthday parties from Benoni to Cape Town, and the few-and-far-between job interviews that still seem to elude me.

During this, the final stretch, I find myself wholly absorbed by the unfolding of some of my classmates' futures. The crazy few who love the fundamental theorem of THE CALCULUS, who want to specialise in capital management; the traditional actuaries that loved the idea of pensions so much that they saw fit to get a second perspective from a new lecturer this year; and the self-proclaimed people's people who are still enchanted by the price of water, houses and Mini Coopers.

To those of you who are brave enough to face the "real" world we read about so often in the ActEd doorstops, good luck. May your fabled weekends be filled by anything other than CAI. To those who plan on punishing themselves for another year, remember one thing, trees have feelings too.

Until next time...

### Jean-Francois Greeff



## Social Event

*'What we usually do....'*

### Ten-pin Bowling and Pizza Social

With only one day to go before the September recess, some of the more adventurous actuarial students decided to broaden their social horizons and joined Aktua for a Bowling and Pizza evening at Menlyn Park Shopping Centre.

For some it was a first, while others clearly had more experience. The top scorer, Eric, broke last year's high score by 61 points with an astonishing 185 points. The rest of us did not have the luxury of counting the number of strikes we bowled, but rather had to spend our time on focusing to keep the ball out of the gutter.

All that bowling left most of us hungry, so next we headed off to Panarotti's for some pizza. They must have known we were coming, because Wednesday is no longer an all-you-can-eat evening.

Thank you to everyone who attended, it was a very enjoyable and entertaining evening. We hope to see more familiar faces there next year!

*Marianne Behr*



## ***Food for Thought***

*'I know what you're thinking... NO, I don't mean a Nandos burger' ☺*

### ***Your online profile could be your downfall***

Posting risqué photos on Facebook showcasing your stellar drinking club performance or waxing lyrical about your sexual escapades on a personal blog could scotch your chances of getting a job

Online social networking tools allow millions of users across the globe to mingle online by sharing personal and biographical details. Recruiters are wisening up to the use of this information to help them make hiring decisions.

"It can work both in a candidate's favour or against them," says a head of recruitment at a large auditing firm. A quick trawl through the Rhodes University Network pages on Facebook shows just how much some users are willing to reveal online. Some students have picked photos showing them passed out on campus lawns or smoking and drinking. That may look fun to friends, but to potential employers it's a red flag. You're incorrect if you think it's a private space reserved for social networking," says one recruiter. "You wouldn't put that information in a CV, so why put it in a public space?" Firms are increasingly looking at how to use online networking sites as a way to determine whether there is anything questionable about that person's lifestyle or that suggests that they wouldn't fit in with their company's culture. "You need to put yourself in an employer's shoes and look at your profile from their perspective," says Mike Stopforth, CEO of Cerebra, a technology consulting firm. He says knowing what information to put online and what to keep private has become an important life skill. "You need to understand how your digital presence affects your future job prospects."

Still, recruiters are unlikely to rely solely on information gathered from the net. "We don't regard digital information on a person as a legitimate, credible character check," says Bronwyn Fell, database specialist at recruitment agency PAC. "We still rely on face-to-face interviews, telephonic references and professional personality tests to ensure candidates are suitable for specific jobs."

But information on sites such as MySpace is generally available to anyone who registers and blogs are a free-for-all if the author allows it. Personal pages on Facebook do require the user's permission, but it is possible to access information via college networks and through your friends. While you can improve your privacy settings to ensure that potential employers don't peek too far into your personal life, if personal data does get out, it's difficult to fix.

"Google never forgets," says Stopforth. But as much as your digital presence can be used against you, it can also be used to your advantage. Showcasing examples of your work, projects and positive associations online can help set you apart from other candidates. "You can either choose to put nothing at all in the public domain or as much as possible," says Stopforth. "If it's positive, your digital persona can actually enhance your chances of getting a job with a savvy employer." For example, employers might like to see that you have friends in senior positions in the banking industry.



More controllable ways to harness technology to impress recruiters include using personal “video resumes” - attached to e-mailed CVs or provided on a CD. Filming yourself doing a powerpoint presentation outlining your qualifications for the jobs, for example, could help to emphasise qualities that fit an employers’ requirements. But it’s risky.

None of the recruiters contacted by *Campus* in SA said THEY had seen candidates do this — while overseas it’s a growing trend. Local recruiters say rather concentrate on getting your paper-based CV free of grammatical and spelling errors before trying to go high tech.

“Old fashioned CVs are still the primary source of information and are crucial in terms of first impressions,” says Fell. “I can’t get that right, you won’t get anything right.”

Trends are changing and developing a professional, personal website could be a good way to get across information to potential employers. Including your website address on your CV could be a simple way for employers to access the information should they want to. Some rules though: a good website is one which has decent information and clarity of presentation, rather than all the technical bells and whistles. Also consider how easy it is to pick up on search engines and how long it takes to download.

The trick to managing your digital brand is building it to attract, not annoy, potential employers.

*Adapted from “Financial Mail (FM) Campus” magazine, Jacqui Wilmot, 20 July 2007*

link: [www.fmcampus.co.za](http://www.fmcampus.co.za)



# Jokes

**'Add a little humour to your life and say it like its hot!'**

**Do you want to fail your actuarial exam?**

Here are 10 ways how...do it with style!

1. Bring a pillow. Fall asleep (or pretend to) until the 10 minute warning is called. Wake up, scream "oh geez, better get cracking" and do some gibberish work. Turn it in a few minutes early.
2. Get a copy of the exam, run out screaming "hey man, I've got those secret documents!!"
3. Respond to the written-answer questions in limerick form. ("There once was a trend factor from Cork...")
4. Make paper airplanes out of the examination paper. Aim them at the proctor's right nostril.
5. Talk the entire way through the exam. Debate your answers with yourself out loud, read questions out loud. If asked to stop, yell out, "I'm SOOO sure you can hear me thinking." Then start talking about what a jerk the proctor is.
6. Bring cheerleaders, to lighten things up.
7. Walk in, get the exam, sit down. About three minutes into it, run out, screaming, "I can't take the stress anymore!"
8. Bring a Game Boy. Play with the volume at max level.
9. On the written answer questions find an interesting way to refuse to answer every question. For example: "I refuse to answer this question on the grounds that it conflicts with my religious beliefs."
10. Bring your pets.

**PROVE:  $4 = 5$**

Hence:

$$-20 = -20$$

$$16-36 = 25-45$$

$$42 - (9 \times 4) = 52 - (9 \times 5)$$

$$42 - (9 \times 4) + 81/4 = 52 - (9 \times 5) + 81/4$$

$$(4 - 9/2)2 = (5 - 9/2)2$$

$$4 - 9/2 = 5 - 9/2$$

Therefore,  $4 = 5$

**Nerd Love  
Solve for "i"**

$$9x-7i > 3(3x-7u)$$

$$\begin{array}{r} 9x-7i > 9x-21u \\ -9x \quad -9x \end{array}$$

$$\begin{array}{r} -7i > -21u \\ -7 \quad -7 \end{array}$$

$$i < 3u$$

## How to refrigerate elephants

### Number Theory:

1. First factorize, second multiply
2. Use induction. You can always squeeze a bit more in.

### Algebra

1. Show that the parts of it fit into the refrigerator.
2. Show that the refrigerator, is closed under addition.
3. Take the appropriate universal refrigerator and get a surjection from refrigerator to elephant.

### Topology:

1. Have it swallow the refrigerator and turn inside out.
2. Make a refrigerator with the Klien Bottle.
3. The elephant is homeomorphic to a smaller elephant.
4. The elephant is compact, so it can be put into a finite collection of refrigerators. That's usually good enough.

### Linear algebra

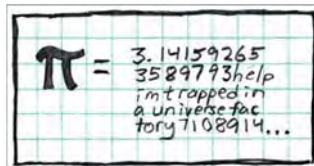
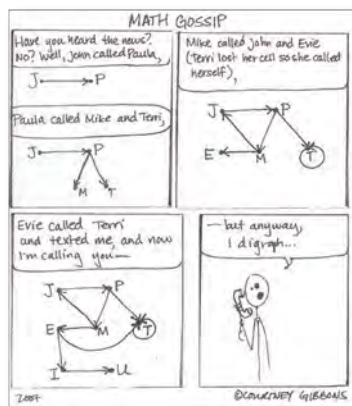
1. Put just its basis down and span it in the refrigerator.
2. Show that 1% of the elephant will fit inside the refrigerator. By linearity, x% will fit for any x.

### Numerical Analysis

1. Put just its trunk and refer the rest to the error term.
2. Work it out using the Pentium

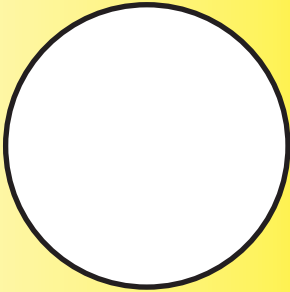
### Statistics:

1. Bright statistician: Put its tail in as a sample and say "Done!"
2. Dull statistician: Repeat the experiment pushing the elephant to the refrigerator.
3. Our new study shows that you CAN'T put the elephant in the refrigerator.

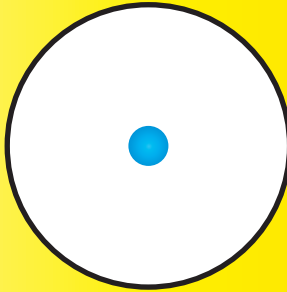


# What is a Ph.D.?

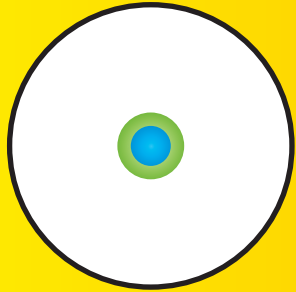
*Imagine a circle that contains all of human knowledge:*



*By the time you finish elementary school, you know a little:*



*By the time you finish high school, you know a bit more:*



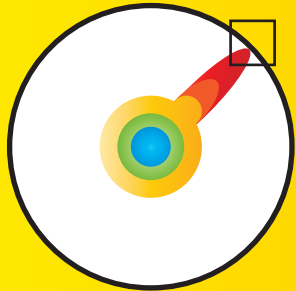
*With a bachelor's degree, you gain a speciality:*



*A master's degree deepens that speciality:*



*Once you're at the boundry, you focus, reading research papers takes you to the edge of human knowledge*



*You push at the boundry for a few years*



*Until one day, the boundry gives way... That dent you've made is called a Ph.D.:*

