



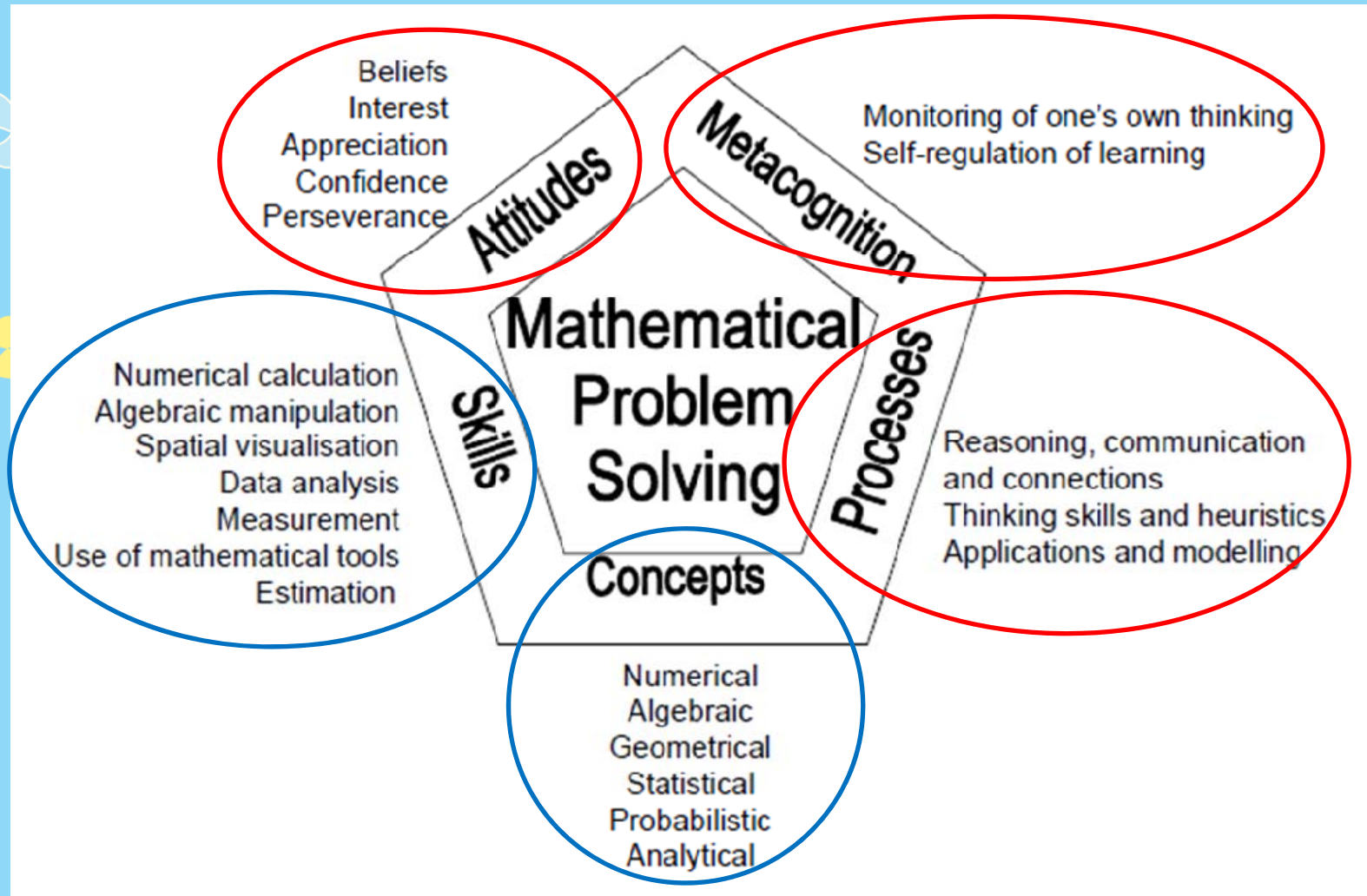
# Online Discussion Forums in Mathematics



Ms Teo Chin Wen  
Nanyang Girls' High School



# Singapore Mathematics Curriculum Framework



# Reasoning and Communication Skills

Me to MA112

Statistics Open-ended Questions

## 4. Another Fishy Problem

The mean number of fishes caught by 6 men was 4 fishes. If the median was 3 fishes and the mode was 2 fishes, what was the largest possible number of fishes caught by one man?

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Total number of fishes caught=  $6 \times 4 = 24$

Since 6 is an even number, the median will be the mean of the third and fourth number which can be 3&3 or 2&4 or 1&5. With the mode as 2, it is impossible to have the third and fourth number as 3, as there can only be two '2's, resulting in the median being 2&3, or 1&5, since 1, 5 and 6 will be the only three numbers present in that situation. Thus, the third and fourth number is 2&4. To have the largest possible number of fishes caught by one man, the smallest number will be put at the front. So, there will be 1,2,2 and 4 as the first four numbers. The sum of the last two numbers will then=  $24 - 1 - 2 - 2 - 4 = 15$ . The smallest fifth number possible is 5, since there is already a 4. Therefore, the largest possible number of fishes caught by one man=  $15 - 5 = 10$ . less...

Mar 12, 2011 | Edit | Delete

**Reasoning and communicating**

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# Alternative Methods

## Statistics Open-ended Questions

### 2. Little Miss Cal Q. Later

Little Miss Cal Q. Later said proudly to her sister, Miss Call U. Later, "I've done eleven 10-point quizzes. The mean is 8, the median is 8 and the mode is 7. What could be my maximum number of perfect scores?"

Her sister replied, "I'll call you later Miss Cal Q. Later!"

Find the maximum number of perfect scores possible for the eleven quizzes.

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- The total score is  $11 \times 8 = 88$ . The possible median position so that the median = 8 (meaning all the values arranged in ascending order and 8 is in the middle) is 6, 7, 8, 9, and 10.  
Um I used guess and check method actually >.> but anyway, the eleven scores are 6, 7, 7, 7, 7, 7, 8, 9, 10, 10 and 10. These add up to 88. The mean = 8, the mode = 7 and the median = 8, hence the scores are indeed correct. The value 10, which is a perfect score, has a frequency of 3 hence the maximum number of perfect scores = 3.

Mar 12, 2011



- I used a slightly different method. The total score =  $11 \times 8 = 88$   
11 is an odd number, so the median is the 6th number which is 8. Since 7 is smaller than 8, the largest number of 7's is 5. (the number of 7's have to be the largest possible number at first so the number of 10's would not be limited. The number can be adjusted later if needed.) The total sum of the last 5 numbers =  $88 - (5 \times 7) - 8 = 45$  since there cannot be 4 '10's, since one of the numbers cannot be 5, the largest possible number of '10's = 3, having the last 5 number more...

Mar 13, 2011

# Questioning

Me to MA112

Real Numbers AMC Q4 Discussion  
(For Register Nos. 19-26)

How many integers in the set 100, 101, 102, ... 999 do not contain the digits 1 or 2 or 3 or 4?

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Numbers starting with 5 =  $6 \times 6$  (6 for each number- 0, 5, 6, 7, 8 and 9 in the tens place.

Numbers starting with 6 =  $6 \times 6$

Numbers starting with 7 =  $6 \times 6$

Numbers starting with 8 =  $6 \times 6$

Numbers starting with 9 =  $6 \times 6$

$6 \times 6 + 6 \times 6 + 6 \times 6 + 6 \times 6 + 6 \times 6 = 6 \times 36$

$= 216$

Therefore, 216 of the numbers from 100 to 999 inclusive do not contain the digits 1, 2, 3, or 4. :)

Feb 24, 2011 | [Edt](#) | [Delete](#)



- But using your method won't there be some numbers with 1, 2, 3 or 4 in the ones place?

Feb 24, 2011 | [Edt](#) | [Delete](#)



. - Yea, my answer is different:

Let any 3-digit number which fits the condition be  $xyz$ .

$x$  can be 5, 6, 7, 8 or 9.

$y$  can be 0, 5, 6, 7, 8 or 9.

$z$  can be 0, 5, 6, 7, 8 or 9.

# Justifying different solutions

## Statistics Open-ended Questions

### 1. Ring Ring Ring!

Annette's phone calls lasted 20min, 7min, 9min, 12min and 7min. She wants to know how long a typical phone call is. Which one of the three central tendencies: mean, median, mode, should she use? Justify your answer.

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- **Mean** It is the most reliable measure and uses all the values in the data to calculate the mean, hence it is a good way to calculate the length of a typical phone call as there are no extreme values to influence the mean.

Mar 11, 2011 | Edit | Delete



- **Median** 20 min and 7min are rather extreme compared to the other values so if mean is used the data might be influenced by extreme values, thus making the "length of a typical phone call" slightly unreliable.

Mar 11, 2011 | Edit | Delete



- **Mode** Mode is used when we want to find the most popular one and typical is sort of like the one that happens most of the time, so I would choose the mode of 7.

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- **Median**. Mode is not very suitable as the mode is 7, which is the extreme. Also, mode is used for popularity. Mean is also not very suitable because there are extreme ends such as 7 and 20 minutes. Median is the most suitable since it will not be affected by the extreme values and will take the value of the middle number.

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# Peer learning

Me to MA112



Real Numbers AMC Q1 Discussion

(For Register Nos 1-9)

The length of each side of a triangle is a different prime number and its perimeter is also a prime number. What is the smallest possible perimeter of such a triangle?

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- The sides are 3, 5 and 11.

Perimeter=  $3+5+11$

= 19//

Refer to Sieve of Erasthenes XDD

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- Largest possible length  $\rightarrow 29-3-5=21$

21 is not a prime number.

$29-3-7=19$

therefore, largest possible = 19

Possible prime numbers=3,5,7,11,13,17,19

smallest possible perimeter= $3+5+7$

=15

2nd smallest possible perimeter= $3+5+11$

=19

ans: 19cm less...

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Me - Try drawing a triangle with sides 3cm, 5cm and 11cm.

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Students not realising that the sum of the 2 shorter sides of a triangle must be longer than the largest side of the triangle.

With a little hint from the teacher...



█ - Firstly, for the perimeter to be a prime number, the sides must all at least be odd numbers. Hence we start with 1,3,5,7,9,11... we have to bear in mind that for the three sides to be able to form a triangle, the value of the longest side must be smaller than the sum of the other 2 sides (eg. 3+5 is larger than 7 hence a triangle can be formed) We should try to look at three consecutive odd numbers (starting from 3) as this will give us the smallest possible value and also it will be possible to form the triangle. "guess and check" The answer is 5,7,11 (D: 23).

Feb 25, 2011 | Edit | Delete

A student pointing out that missing property...



oops gahh i just realised...yea it makes sense...the property i mean, altho i had to read █'s post alot of times b4 making sense of it, cos for some reason all along i thought that the longest side had to be longer...now i realise. I mean, if the longest side is longer than the two shorter sides, how can there be a triangle?? even if i put the 2 shorter lenth together to form a straight line the ends of the longer side still wouldnt meet with the two other lengths put together in a straight line right?? TT\_\_TT my answer was C...ok now i realise.

Feb 27, 2011 | Edit | Delete

Another student making sense of it...



# Fun Math

Me to MA112

The Great "Pie" Challenge 2

How I wish I could calculate pi

or

How I like a drink, alcoholic of course, after the heavy lectures involving quantum mechanics.

or

Now,

I wish I could recollect pi

"Eureka!" cried the great inventor

Christmas pudding, Christmas pie

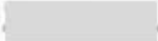
Is the problem's very center

Question: How are the above 3 statements/poem linked to the Great "Pie" Challenge?

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 - 3.1415926535897932384626433832795028...the first few no.s there's a poem to it... my mother taught me. 山顶一寺一壶酒，尔乐苦煞吾，把酒吃，酒杀尔，杀不死，乐尔乐。(3.1415926535897932384626) an easy method to remember the first 23 numbers. there is a story to this poem...its about a student, assigned to remember the first 23 no of the pie. he made it into a poem describing the teacher...

Feb 20, 2011

# Fun Math



██████████ - Pie, (3)

I like a treat, (1415)

lollipops, or sweets.(926)

maybe the taste.(535)

avocado (hazelnut) ice-cream, chicken dumpling(7(8)979)

Ok now I shall change it!!

Yes, it doesn't make sense... and I'm hungry...so I came up with this.

Feb 25, 2011 | Edit | Delete

**Student creating her  
own mnemonic on  $\pi$ !**



# Fun Math

Me to MA211, MA112, MA201, MA109

Musical Math!

And combining Pi and e, we have the Pi Symphony written by Lars Erickson in 1992.  
Marvellous!

Warning: might be an overdose for some.

URLs in case the videos below do not work:

<http://www.youtube.com/watch?v=CGK2i2BaWW8&am.....>

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[How Pi Sounds Like](#)



[Pi Symphony Movement 1](#)






[Explanation of the Pi  
Symphony](#)

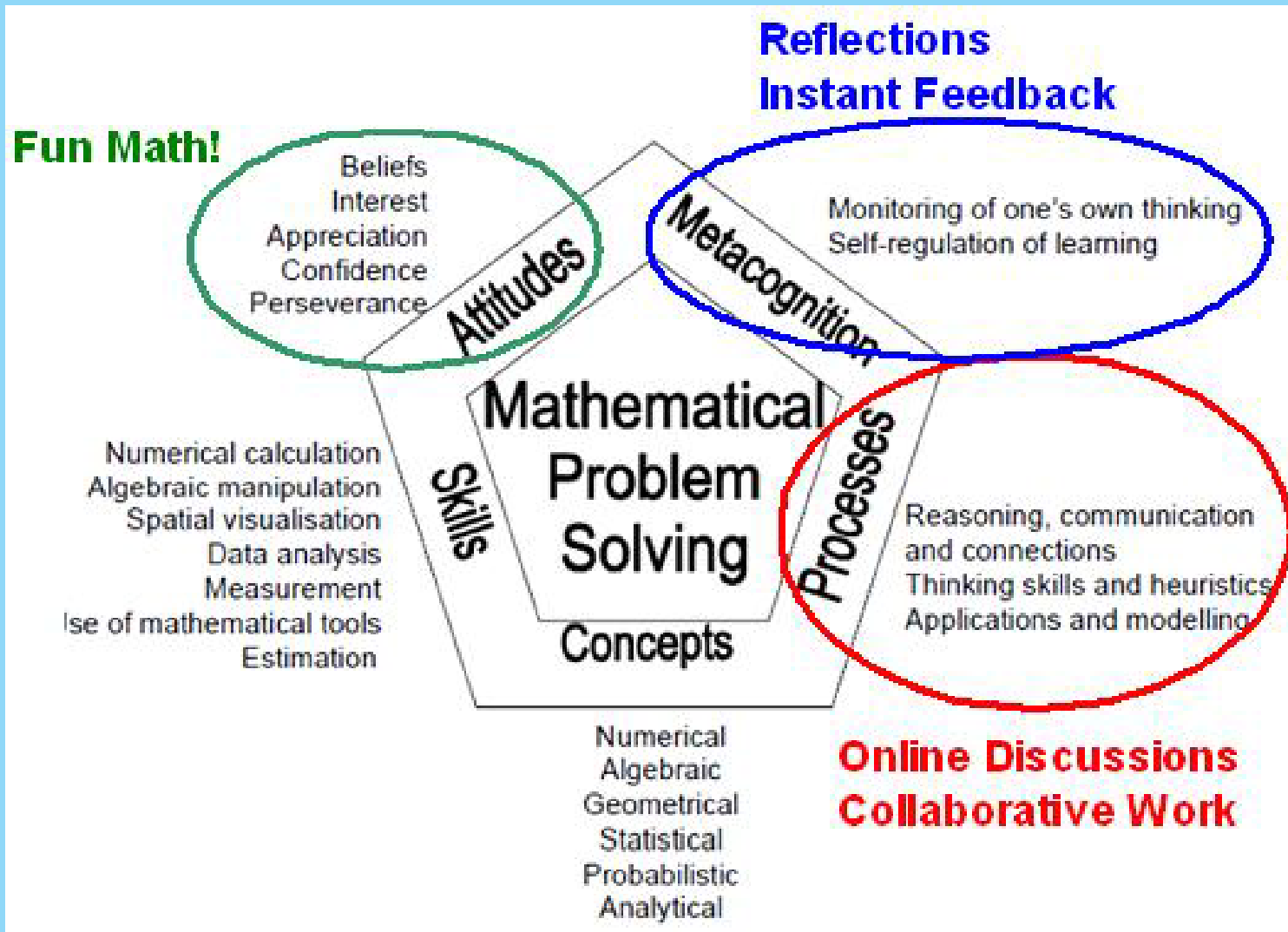




# Online Discussion Forums




- train students to communicate their thinking processes
  - promote collaborative learning
  - allow you to hear from every student
  - allow students to reflect on their work
  - extend the available time for interaction and learning
  - take place outside lesson time
- 
- 
- 

# Summary





# Challenges Faced

- Participation rate
  - Moderation
  - Multiplier effect
  - Choice of questions for discussion
- 
- 
- 



# Platforms for Online Discussions

- LMS
- Facebook
- Wikispaces
- Blogs
- [Edmodo](#)

**User friendly**





Thank you!



[teo\\_chin\\_wen@nygh.edu.sg](mailto:teo_chin_wen@nygh.edu.sg)

