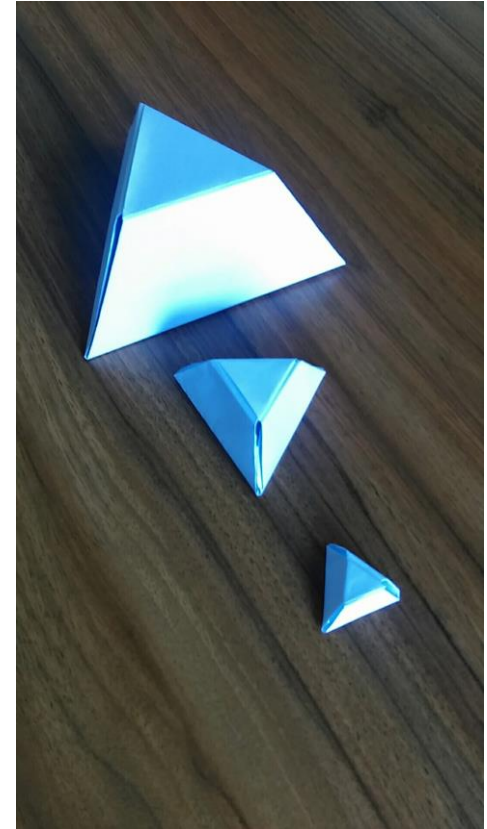


Mathematics Coffee Morning with BMH Maths Team and Dr. Wall 数学咖啡晨会

- Objectives 目标
- Explore some mathematics 探索数学
- Consider how we best encourage students to be mathematical
思考如何最大程度挖掘孩子的数学潜能
- Provide some websites and resources you can use at home in addition to the mathematics textbook
除数学课本以外的教学资源
- Preparing pupils for IGCSE and A level Mathematics
帮助学生准备IGCSE和A Level考试

The Truncated Tetrahedron 截四面体

- From A4 we can fold a perfect equilateral triangle and from there a tetrahedron.
- Along the way we consider the symmetries and angles and convince ourselves and others of our conjectures.
- We role play being a glacier truncating a tetrahedral mountain and then being Eskimos building an igloo by placing trapezoidal faces of truncated tetrahedra together.



Methods of Multiplication

- Get into groups of 4 and number yourselves 1, 2, 3, 4
四人为一组，并按照1/2/3/4编号
- Go and learn a method of multiplication from teacher 1, 2, 3 or 4
分别与对应号数的数学老师学习乘法
- Return to your group
回到各自的小组
- Teach the members of your group your method
与小组成员交流各自学到的方法
- Challenge: how will you deal with decimals?
如何处理小数乘法

Teaching Others...The Best Way to Learn

相互学习——最好的学习方法

- Show your group members how to do:
- 567×48 and 5.67×4.8 by your method
- Test them by getting them to do
- 476×84 and 4.76×8.4 by your method
- What are good checking strategies?

Magic Multiplication

- 12345679 is a magic number
- How?
- What is your favourite number from 1-9 inclusive?
- If it is 7 multiply 12,345,679 by 63
- If it is 4 multiply 12,456,679 by 36
- How does this work? How can other magic numbers be found?

Mental Imagery; Muscle Memory; Shape and Space and Computer Coding

Areas of Maths: 2d Geometry, angles, polygons, inverse operations, enlargements

First we role play being a robot and shuffle with small steps and closed eyes to commands such as : “Forward 10 Right 90 forward 20 right 90 etc”

We then repeat with instructions designed to produce regular polygons then we moved to FMSLOGO which is free software one to one with what we have been doing, only now we are issuing the commands.

FMSLOGO

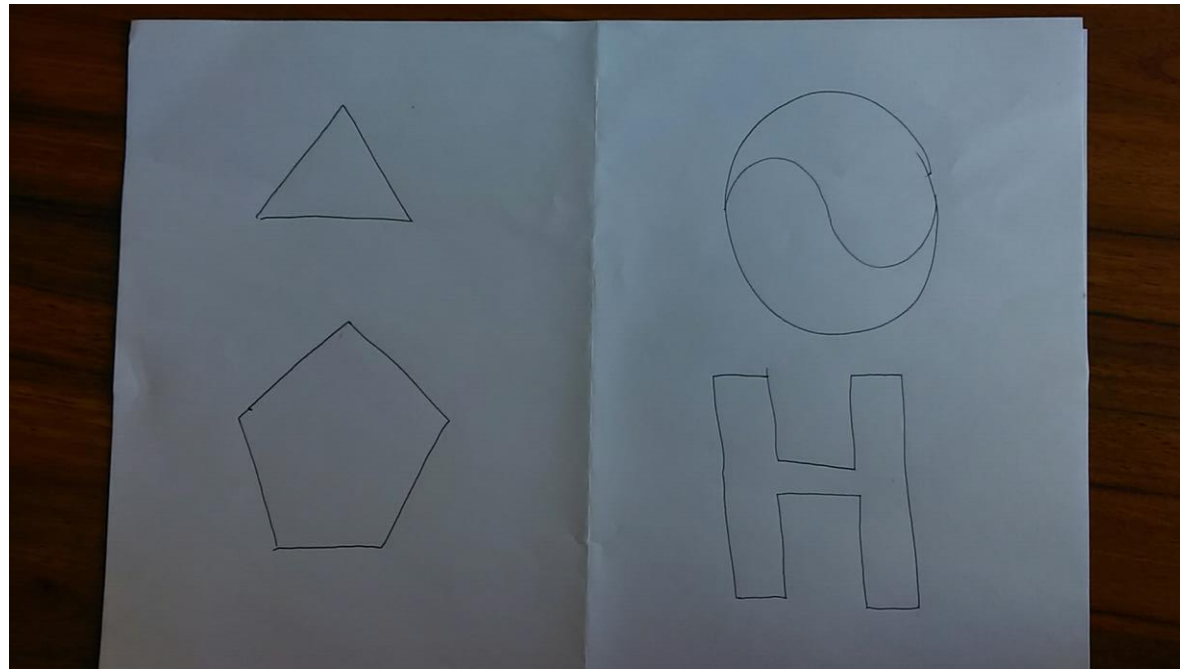
<https://fmslogo.en.softonic.com/> free software can be downloaded from this link

Useful commands: 常用指令代码

| | |
|-------|---|
| FD 30 | forward 30 little steps |
| BK 40 | backwards 40 little steps |
| RT 60 | right turn on the spot (clockwise turn) 60 degrees |
| LT 45 | left turn on the spot (anticlockwise turn) 45 degrees |
| PPT | pen paint (puts ink in the pen) |
| PE | pen erase (puts an eraser on your pen) |
| CS | clear screen |

Challenges

- Write logo commands to produce:



Predict and test what each code will produce 猜猜每个代码会生成什么图形？

- REPEAT 5 [FD 100 RT 60]
- REPEAT 270 [FD 1 RT 1]
- REPEAT 180 [FD 0.5 RT 1]
- REPEAT 60 [FD 100 WAIT 200 PE BK 100 LT 6 PPT]

General advice for encouraging mathematical thinking 如何培养数学思维

- Think aloud. Add the talking to the doing like children do 有声思维
- Do your working on a large white board 利用白板
- Teach someone else or an imaginary friend 扮演小老师
- Represent the problem as a diagram
利用图表呈现问题
- Put everything you know on the diagram
利用图表罗列已学知识
- Put what you want to know on the diagram
利用图表罗列待学知识
- Consider how you might get from what you know to what you want.
考虑如何从已学知识中获得待学知识

References

参考书目

www.myimaths.com

Karachi

cosine206

<https://www.bbc.co.uk/bitesize>

Key Stage 2 bitesize is suitable for Prep 2-Prep 5

Key Stage 3 bitesize is suitable for Prep 6-Prep 8

GCSE bitesize is suitable for Senior 9-Senior 10

<https://www.cgpbooks.co.uk/>

Great resources for Primary and Secondary

The Video maths tutors are really good

[https://www.cgpbooks.co.uk/secondary-books/gcse/maths/mfvc43d-mathstutor-gcse-maths-video-tutorials-\(](https://www.cgpbooks.co.uk/secondary-books/gcse/maths/mfvc43d-mathstutor-gcse-maths-video-tutorials-()

[https://www.cgpbooks.co.uk/secondary-books/gcse/maths/mhvc43d-mathstutor-gcse-maths-video-tutorials-\(:](https://www.cgpbooks.co.uk/secondary-books/gcse/maths/mhvc43d-mathstutor-gcse-maths-video-tutorials-()

<https://corbettmaths.com/>

Free maths resources for all levels

<https://www.ukmt.org.uk/>

UKMC The home of UK Maths Challenge: Great maths competitions

References

- Vi Hart <http://vihart.com/>
- A brilliant polymaths with a zany style
- Lots of art and maths ideas such as the one in the video below:
<https://www.youtube.com/watch?v=v-pyuaThp-c>
- Eddie Woo Great Chinese Australian Teacher...
- https://www.youtube.com/channel/UCq0EGvLTyy-LLT1oUSO_0FQ
Numberphile wonderful channel for maths enthusiasts
<https://www.youtube.com/channel/UCoxcjg-8xIDTYp3uz647V5A>