Transition Year – What Can I Do In Mathematics Class?

1. DO SOMETHING FROM THE TEXTBOOK
2. USE A 'JUMPING-OFF' TOPIC OR RESOURCE
3. AVAIL OF THE INTERNET
4. INVESTIGATE STATISTICS
5. CONSTRUCT OBJECTS WITH MATHEMATICAL PROPERTIES
6. USE RESOURCES DESIGNED FOR TY
7. DO FORWARD PLANNING FOR MATHS WEEK
8. CONTINUE CALCULATIONS
9. DIG INTO FAMOUS UNSOLVED PROBLEMS (WHICH ARE EASY TO STATE BUT HARD TO SOLVE)
10. TRY INTERNATIONAL COMPETITIONS
11. USE IMTA RESOURCES
12. HAVE DISCUSSIONS/CONTRIBUTIONS
13. INVESTIGATE CAREERS IN MATHEMATICS
14. ORGANISE TRIPS TO SITES OF MATHEMATICAL INTEREST
15. READ A BOOK
16. ADDITIONAL SUGGESTIONS

See below for links associated with these topics:

Resources compiled by Neil Hallinan 2018

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DO SOMETHING FROM THE TEXTBOOK

1. Prepare a topic for the Leaving Certificate.
2. Revise a topic from the Junior Certificate.

2

USE A 'JUMPING-OFF' TOPIC OR RESOURCE

1. Items from the History of Mathematics – people; times; topics; etc.
2. Mathematicians from Ireland (Annals of Irish Mathematics)
3. Women in Mathematics
4. Puzzles (Math is Fun)
5. Art and Sculpture.
6. Dramatise a concept (see Slide 6)
7. Perform a play about William Ronan Hamilton's discovery of Quaternions in 1843 (download from Dropbox)
8. Mathematics and Climate Change (+ PLUS eMagazine)
9. Card games: e.g. Introduction to Bridge
10. Coding using Scratch. See also ScratchMaths.
11. The mathematics of some sport or an aspect of a sport (+PLUS eMag.)
12. The mathematics of fitness (Download)

3

AVAIL OF THE INTERNET

1. CIMT - Centre for Innovation in Mathematics Teaching (UK) with Something for (almost) Everyone. Try Resources I and Topical Applications of Mathematics.

2. CIMT - Core Maths Subject Support (UK) Try Mathematical Modelling – from Bode's Law to Bar Code Design.

3. CIMT – Teacher Subj. Specialism Training Cross Phase Maths Course (UK)

4. CIMT - Teacher Subject Specialism Training: Mathematics Course (UK)

5. www.mrbartonmaths.com Enjoy your maths.

6. https://www.tes.com/teaching-resources (exTimes Educational Supplement)

7. https://nrich.maths.org/ Lots of leads to follow.

8. www.tyireland.com Shows useful links.

9. www.pdst.ie Suggestions from the Professional Development Service.

10. Practice skills (ixl.com)

11. Mathematical podcasts from University of Arkansas.

12. +PLUS Maths eMag

13. Interactive maths miscellany

14. A Maths Blog by Peter Lynch

15. www.cardcolm.org A wealth of resources from mathematical prestidigitator Colm Mulcahy.

16. www.scoilnet.ie See resources for different year groups

17. Exam Paper Archive (and more)

18. www.mathsisfun.com Topics and tools for teaching

4 INVESTIGATE STATISTICS

1. Investigate statistical problems using Monte Carlo methods:
    a) Using physical objects – cards, dice; coins, ball-bearings.
    b) Using Excel.
2. Benford's Law of First Significant Figures.
3. Prime number patterns.

5 CONSTRUCT OBJECTS WITH MATHEMATICAL PROPERTIES

1. A Pinhole camera (explained on YouTube); Construction (YouTube); Further varieties of camera obscuras
2. A clinometer (YouTube)
3. An astrolabe (quadrant) (YouTube) or sextant
4. Knotted ropes (pdf) for right-angled triangles
5. An Analemmatic Sundial (Wikipedia)
6. A pantograph to draw enlargements
7. A Golden Mean dividers
8. A Ramp; Ramps in a carpark; Slopes and angles values
9. Wave generators/tracers. Understanding sine waves; Animation (among others)
10. A Geoboard for geometry
11. A Galton Board (quincunx) - Pascal's Triangle with pins
12. Semaphore flags
13. Origami (paper folding)

6 USE RESOURCES DESIGNED FOR TY

1. The Accenture Transition Year Project
2. The booklet '*A Resource for T.Y. Mathematics Teachers'* by Fiacre Ó Cairbre, John McKeown, Richard Watson, 2006. [This spiral-bound book was distributed to all schools by the Department of Education and Science.]
3. Problem Solving and Number Theory for TY by John O'Brien (Download)
4. TY Mathematics Module by John O'Brien (Download)

7 DO FORWARD PLANNING FOR MATHS WEEK

1. Set up Maths Trails
2. Develop Maths Eyes
3. Produce posters of mathematical ideas.

8 CONTINUE CALCULATIONS

1. Investigate more extensive use of your calculator using the supplied manual or online download
2. Improve upon Mental Arithmetic
3. Create a macro in Excel

9 DIG INTO FAMOUS UNSOLVED PROBLEMS (WHICH ARE EASY TO STATE BUT HARD TO SOLVE)

1. The Collatz Conjecture (Hailstone Sequence Problem)
2. The Goldbach Conjecture
3. The Erdős-Moser Equation
4. The Twin Prime Conjecture (see also Cousin Primes, etc.)
5. The Infinity of Perfect Numbers
6. Circle packing in a triangle problem
7. This one has been solved: Pólya Conjecture - likely? but DISPROVED!

10 TRY INTERNATIONAL COMPETITIONS

1. See the IMTA (Competitions) links for many competitions.

2. American Mathematical Competitions (AMC). Eg AMC 10: https://www.maa.org/math-competitions/amc-1012
3. University of Waterloo competitions (e.g. Pascal, Cayley, Fermat mathematics competitions): http://www.cemc.uwaterloo.ca/contests/pcf.html

4. Investigate the IrMO - Irish Mathematical Olympiad competition and the EGMO - European Girls' Mathematical Olympiad.

11 USE IMTA RESOURCES

1. Enter the IMTA Peter's Problem Competition for TY students

2. Use items from the IMTA Newsletters

12 HAVE DISCUSSIONS/CONTRIBUTIONS

1. Form a discussion group.

2. Join a discussion group: www.mathscircles.ie

3. Write a mathematical blog for school.

4. Find relevant TED Talks (Technology, Entertainment and Design): www.ted.com or IMTA (Educational Sites) link 'best statistics talk ever'

5. Invite a practitioner of mathematics in industry to give a talk:
    a) An engineer from Engineers Ireland
    b) An actuary: Society of Actuaries
    c) A meteorologist: Met Éireann FAQ
    d) An architect: Royal Institute of the Architects of Ireland
    e) A statistician: Irish Statistical Association

13 INVESTIGATE CAREERS IN MATHEMATICS

1. https://www.smartfutures.ie/

14 ORGANISE TRIPS TO SITES OF MATHEMATICAL INTEREST

1. GoQuest - Dublin
2. W5 - STEM Hub - Belfast
3. Plan It Yourself:
   a) Visit a local bridge
   b) Visit a sundial (or an analemmatic sundial in Dun Laoghaire)
   c) Observe buildings which have notable mathematical design features
   d) Visit a racetrack
   e) Visit a financial centre
   f) Go see an observatory
   g) Tour a lighthouse

15 READ A BOOK

1. Read a book with a mathematical theme:
   a) See Maths Fiction for Children and Adults (Goodreads.com)

   b) See Novels for Maths Lovers (Bookriot.com)

   c) Try to source books such as:

Books Old and New worth reading

1) Mathematician's Delight; W.W. Sawyer; Penguin Books; 1943
2) Mathematics in Western Culture; Morris Kline; Penguin Books; 1953
3) Prelude to Mathematics; W.W. Sawyer; Penguin Books; 1955
4) The French Mathematician; Tom Petsinis; Penguin Books; 1997
5) In Code – A Mathematical Journey; Sarah Flannery (with David Flannery); Profile Books; 2000
6) Moneyball; Michael Lewis; W.W. Norton & Co. Ltd., London; 2004
7) God's Clockmaker; John North; Continuum, London; 2006
8) beating the odds – the hidden mathematics of sport; Rob Eastaway and John Haigh; Robson Books, London; 2007
9) Alex's Adventures in Numberland; Alex Bellos; Bloomsbury, London; 2010
10) Maths Heroes; Billy Walsh; Billy Walsh, Carrick-On-Suir; 2015
11) The Boole Sisters – A Remarkable Family; Ann Carroll; Poolbeg Press, Dublin; 2017