MATH 1070: Mini-talk 1

Aim for Mini-talk 1: Getting started

Guidelines

- Students choose pairs a week in advance.
- Students are given a fact (either Collatz Conjecture or Koch Snowflake).
- Three minute talk, at desks. 'Try not to use the piece of paper I gave you with the fact. You can draw or write yourself.'
- Before the talk:
  - Think about what you are going to say.
  - Anticipate your audience's questions.
  - Look up any more information.
  - Have a quick run through with someone else to make sure it goes for three minutes.
  - Come prepared (especially if you want to show examples).
  - Consult the presentation rubric for other points to consider.
- After the talk: think of one thing that the other person did that worked well. Then tell them (30 seconds).

MATH 1070: Mini-talk 2

Aim for Mini-talk 2: Build confidence; make improvements

Guidelines

- Students choose pairs a week in advance. Different than last time.
- Students re-present their fact.
- Three minute talk, at desks. 'Try not to use the piece of paper I gave you with the fact. You can draw or write yourself.'
- Before the talk: as in Mini-talk 1.
- After the talk: think of one thing that the other person did that worked well. Then tell them (30 seconds).

MATH 1070: Mini-talk 3

Aim for Mini-talk 3: Standing up; using whiteboards

Guidelines

- I select student pairs (from 'peer group').
- Students talk about their project topic.
- Three minute talk, at whiteboard.
- Before the talk: as in Mini-talk 1.
- After the talk: think of one thing that the other person did that worked well. Then tell them (30 seconds).

MATH 1070: Mini-talk 4

Aim for Mini-talk 4: Present a new topic; listener to ask questions

Guidelines

- I select student pairs.
- Students are given a fact (Prime Numbers or Fibonacci Sequence).
- Three minute talk, at whiteboard.
- Before the talk: as in Mini-talk 1.
- After the talk: think of one thing that the other person did that worked well. Then tell them (30 seconds). Ask one question.

MATH 1070: Mini-talk 5

Aim for Mini-talk 5: Prepare visual aids; listener to ask questions

Guidelines

- I select student pairs.
- Students present the other fact from Mini-talk 4.
- Three minute talk, at whiteboard.
- Prepare something beforehand to write or draw.
- Before the talk: as in Mini-talk 1.
- After the talk: think of one thing that the other person did that worked well. Then tell them (30 seconds). Ask one question.

MATH 1070: Mini-talk 6

Aim for Mini-talk 5: Adapting to larger audience; time-keeping; self-evaluation.

- Self-selected topic. Suggestions are in a list.
- Arrange yourself in self-selected groups of three.
- Give your talk at the whiteboard.
- Talks are four minutes (not the usual three minutes).
- Take turns in being the **time keeper**. The time keeper is to show a yellow card when there are 30 seconds remaining.
- After the talk, self-evaluate according to the rubric for final project talks.
- Choose your own topic (not your project topic!), which can come from the list below. Your criteria:
  - appropriate level for your audience
  - appropriate content for a four minute talk
  - topic is of interest
  - if you can see a good way to present it (including diagrams or other examples)
  - does it have wow! factor (cool factor, something unexpected)

Possible Topics

- Pascal's Triangle
- Venn Diagrams
- Your favourite mathematical number, for example: φ, π, e, $\sqrt{2}$, i, ∞
- Perfect Numbers
- Really Big Numbers
- Graham's Number
- Binary Numbers
- Numbers in other bases
- Approximating pi using polygons
- Tesselations
- Fractals
- Fermi Problems
- Benford's Law
- Prime Spirals
- Magic Squares
- Fermat's Last Theorem
- The Birthday Paradox/Problem
- The Three Utilities Problem
- Zeno's Paradox
- The Potato Paradox
- The Travelling Salesman Problem
- The Missing Square Puzzle
- Irrational Number Spirals
- The Normal Distribution
- Something you've learned in another maths class
- ...

Some rich sites for ideas:

- http://mathmunch.org
- https://www.math.hmc.edu/funfacts/
- http://nrich.maths.org
- http://plus.maths.org