

Exploring & Applying Exponential Functions

Mark O'Brien - OTRNet

My background

- Secondary maths teacher for over 20 years
- Author/Developer of Living Maths Series and Integrated Maths Modules
- Up to 2003 teaching at Eastern Hills SHS, WA, in Maths and Middle School
- Currently doing PD/Consultancy in schools, writing curriculum materials for DET and running OTRNet
- Interested in ‘the transformation of education’

A Vision for School Mathematics:

NCTM Principles & Standards 2003

Imagine a classroom, a school, or a school district where all the students have access to high-quality, **engaging mathematics instruction**. There are ambitious expectations for all, with accommodation for those who need it.

Knowledgeable teachers have adequate resources to support their work and are continually growing as professionals. **The curriculum is mathematically rich**, offering students opportunities to learn important mathematical concepts and procedures with understanding. Technology is an essential component of the environment.

Students confidently engage in **complex mathematical tasks** chosen carefully by teachers. They draw on knowledge from a wide variety of mathematical topics, sometimes approaching the same problem from different mathematical perspectives or representing the mathematics in different ways until they find methods that enable them to make progress.

Teachers help students make, refine, and explore conjectures on the basis of evidence and use a variety of reasoning and proof techniques to confirm or disprove those conjectures. Students are flexible and resourceful problem solvers.

Alone or in groups and with access to technology, they work productively and reflectively, with the skilled guidance of their teachers. Orally or in writing, students communicate their ideas and results effectively. They **value mathematics and engage** actively in learning it.

Resource

- Integrated Maths Module:

- Exponential Functions 1

The Learning Model

- Exploration/Immersion
- Formalisation
- Application

Integrated Maths Modules Materials

- Activities = Exploration/Immersion
 - Allow students to connect to the topic with rich and engaging learning experiences
- Applications
 - Allow students to apply concepts and understandings to non-routine contextual situations

Activities = Exploration/Immersion

- Allow students to connect to the topic with rich and engaging learning experiences
 - A: An Investment Model – p4
 - B: Paper Sizes – p7
 - C: Piano Keyboard Frequencies – p9
 - D: Patterns with Numbers – p10
 - E: Different Rules – p 14
 - F: Graphs of Functions – p17
 - G: Investigation: Tower of Hanoi – p21

Applications

- Allow students to apply concepts and understandings to non-routine contextual situations
- A: Sums of Money – p37
- B: Double Your Money – p39
- C: Depreciating the Value of Cars – p41
- D: Newspaper Search: What's The Best Rate? – p43
- E: An Ecological Survey – p44

Website Resources

- On our website we have Teaching & Learning Resources for all modules.
- Teaching & Learning Resources for this module

Conclusion

- Comments, Questions, Discussion
- “As teachers, it's not about how well we teach, but the quality of the learning experiences and learning environment we create in our classrooms”.

Exploring & Applying Exponential Functions

You can find out more about this topic and the resources written to support this style of teaching at www.otrnet.com.au.

You can also download this presentation and other presentations and papers from our website.

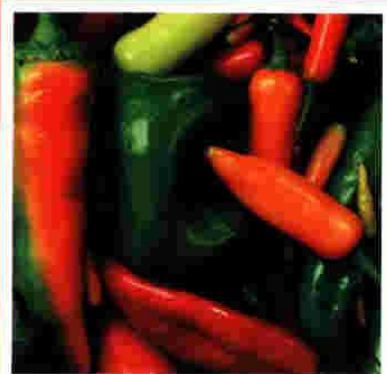
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Mark R O'Brien

LIVING MATHS

2B



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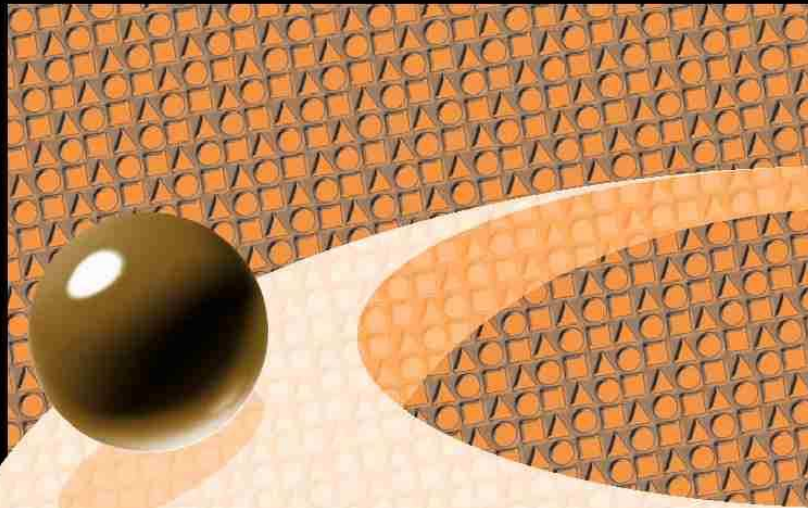


The Living Maths series

A series of eight texts with support books written by WA maths teachers for non tertiary bound students.



Students' Integrated Maths Module



Quadratic Functions 1

Mark R O'Brien



Integrated Maths Modules

A set of 35 modules
designed to support
modern classroom
pedagogies

