Serving
Our Strongest Students

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MathEducation.page

What about all the other students?

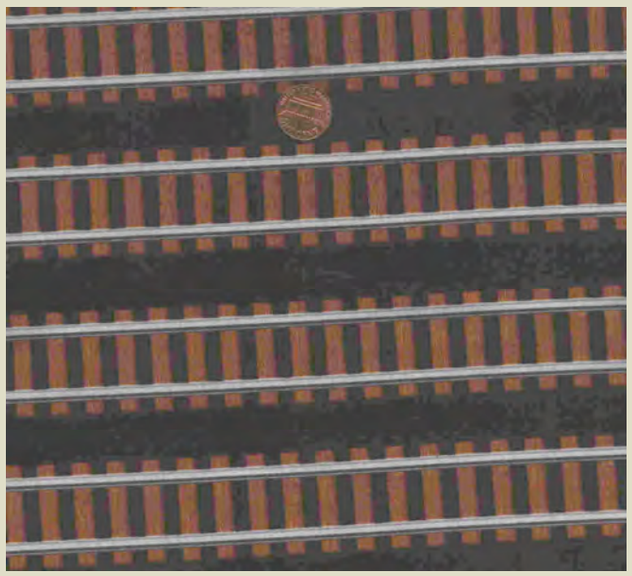
Access

Importance of strong students

◊ Politically

◊ Philosophically

Tracking



this is great!

where's the engine?

not so easy for a student to switch to a higher track

Acceleration

The Power of Culture

◊ societal expectations

◊ standard curriculum

◊ school tradition

◊ parental pressure

◊ strong students themselves

Racers vs. Diggers

Other approaches

Access and challenge can coexist

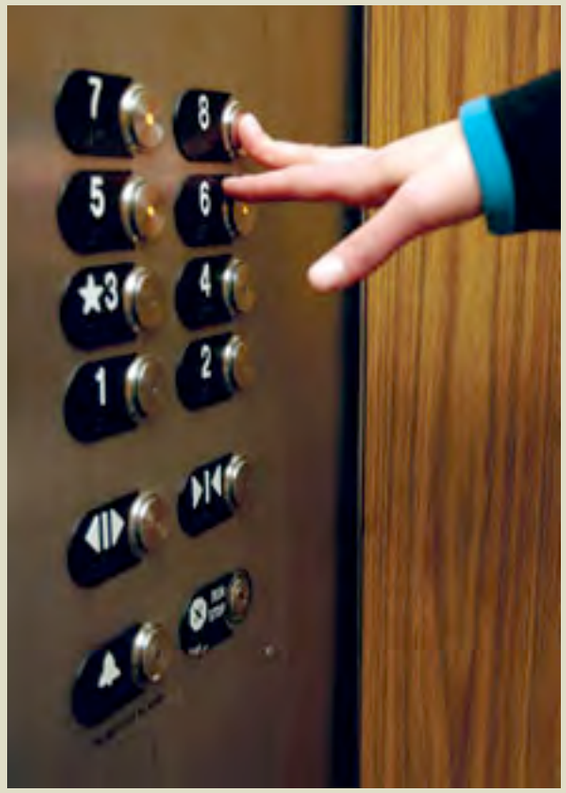
Some techniques for heterogeneous classes

(All classes are heterogeneous)

◊ Alliance with the strongest students

◊ Support for the weakest

The Elevator Strategy



Stop on all the floors!

Every day...

- Something too difficult
- Something too easy
- Something “just right”

Pacing

◊ Constant forward motion

◊ Eternal review

Importance of strong students

◊ Politically

◊ Philosophically

◊ Pedagogically

Curriculum

"No threshold, no ceiling"
activities in core classes

Curriculum

more depth

Example:

Map of Theorems About Quadrilaterals

What conditions make a quadrilateral be a...		Properties of special quadrilaterals:
	Kite (two pairs of consecutive, equal sides)	
	Trapezoid (exactly one pair of parallel sides)	
	Isosceles trapezoid (trapezoid with other pair of sides equal)	
	Parallelogram (two pairs of parallel sides)	
	Rectangle (all angles equal)	
	Rhombus (all sides equal)	
	Square (all sides equal, all angles equal)	

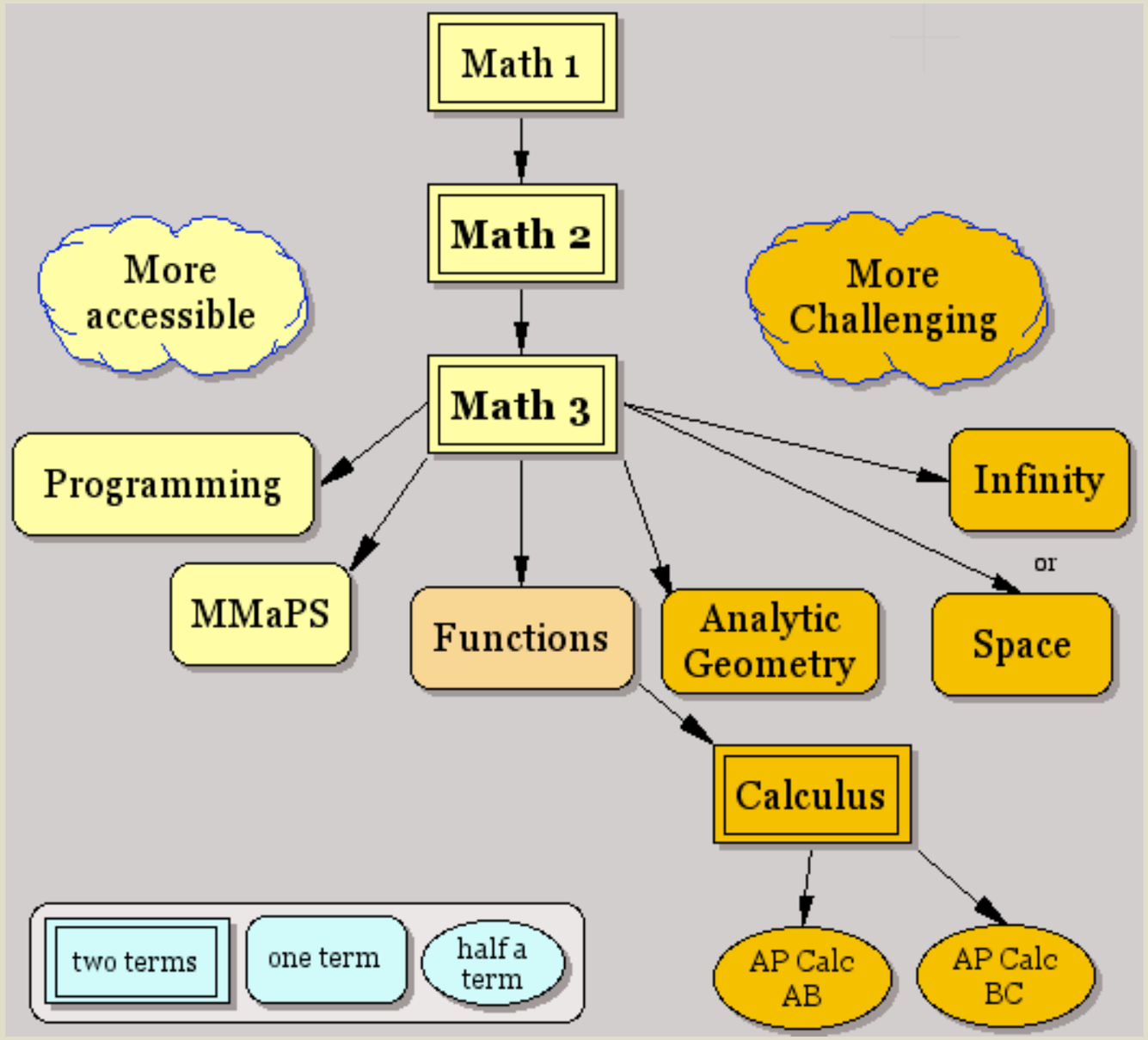
Example:

Map of Theorems About Quadrilaterals

What conditions make a quadrilateral be a...		Properties of special quadrilaterals:
	Kite (two pairs of consecutive, equal sides)	Diagonals are perpendicular One diagonal bisects the other One pair of opposite ∠s are =
	Trapezoid (exactly one pair of parallel sides)	
	Isosceles trapezoid (trapezoid with other pair of sides equal)	Base angles are = Diagonals are =
Opposite ∠s are = One pair of sides are // and = Opposite sides are = Diagonals bisect each other	Parallelogram (two pairs of parallel sides)	Opposite sides are = Diagonals bisect each other Opposite angles are =
Diagonals are = and bisect each other	Rectangle (all angles equal)	Diagonals are =
	Rhombus (all sides equal)	Diagonals are perpendicular. They bisect each other, and the angles.
	Square (all sides equal, all angles equal)	Diagonals are equal and perpendicular. They bisect each other, and the angles

Curriculum

more electives


Math 1
Math 2
Math 3
More accessible
More Challenging
Programming
Infinity
MMaPS
Functions
Analytic Geometry
or
Space
Calculus
AP Calc AB
AP Calc BC
two terms
one term
half a term

Space

◊ Transformational geometry

- Matrices

◊ Symmetry

- Abstract algebra

◊ Dimension

- 3D: polyhedra

- 4D: introduction

Infinity

◊ Infinite sets

- Cantor

◊ Proof

- by contradiction
- by mathematical induction

◊ Dynamical systems

- iteration and chaos

◊ Fractals:

- self-similarity
- recursion and programming

Summary

◊ Elevator strategy

◊ Constant forward motion

◊ “No ceiling” activities

◊ Some topics in depth

◊ Breadth through electives