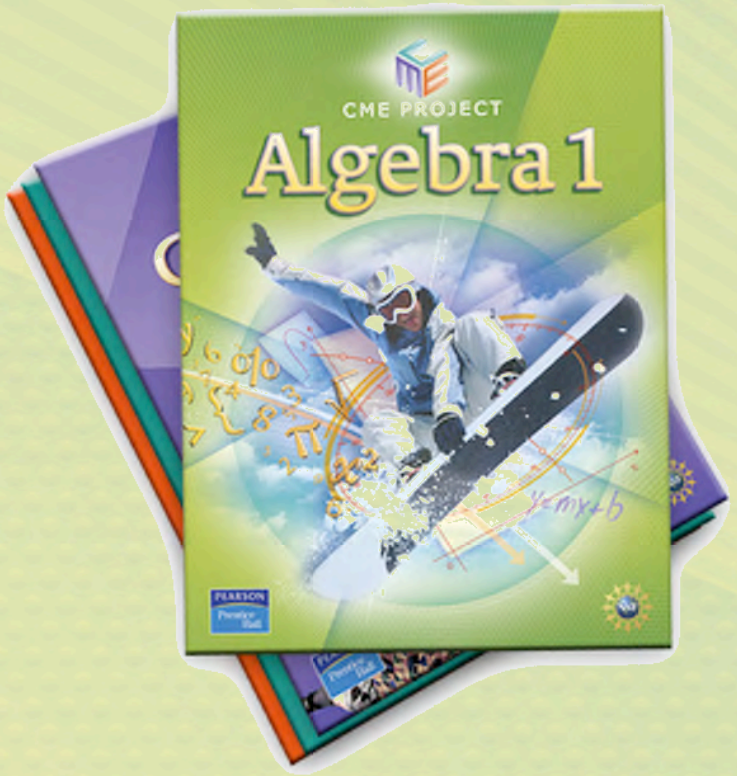
What is the CME Project?

- A Brand New, Comprehensive, 4-year Curriculum
- NSF-funded
- Problem-Based, Student-Centered Approach
- “Traditional” Course Structure



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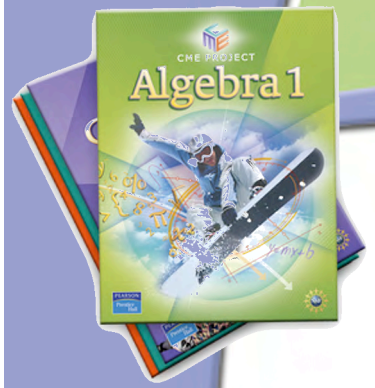

CME Project Overview

History

- Connected Geometry
- Mathematical Methods for High School
- CME Project incorporates both previous courses

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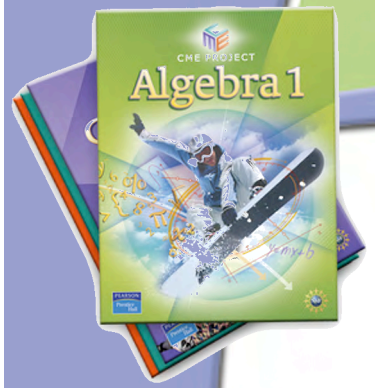

CME Project Overview

Contributors

- EDC's Center for Mathematics Education
- National Advisory Board
- Core Mathematical Consultants
- Teacher Advisory Board
- Field-Test Teachers

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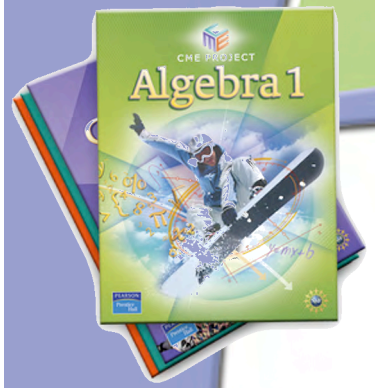

CME Project Overview

Fundamental Organizing Principle

The widespread utility and effectiveness of mathematics come not just from mastering specific skills, topics, and techniques, but more importantly, from developing the ways of thinking—the *habits of mind*—used to create the results.

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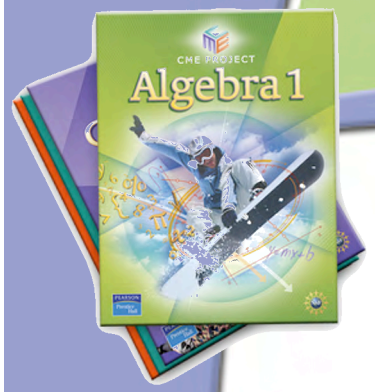

CME Project Overview

Relationship with Texas Instruments

CME Project makes essential use of technology:

- A “function-modeling” language (FML)
- A computer algebra system (CAS)
- An interactive geometry environment

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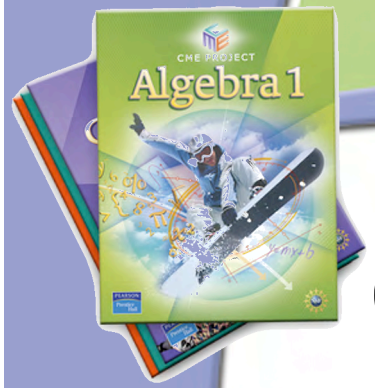

CME Project Overview

Why CAS-Based Technology?

- To make tractable and to enhance many beautiful classical topics, historically considered too technical for high school students, by ***reducing computational overhead***.
- To provide students a platform for ***experimenting*** with algebraic expressions and other mathematical objects in the same way that calculators can be used to experiment with numbers.
- To allow students to build computational models of algebraic objects that have no faithful physical counterparts, ***highlighting similarities in algebraic structures***.

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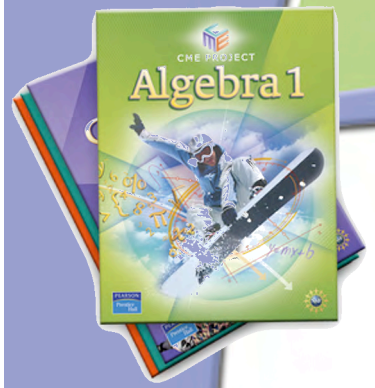

Reducing Computational Overhead

Newton's Difference Formula

- Find a polynomial function that fits this table of data.

0	6
1	–9
2	–20
3	21
4	186
5	571

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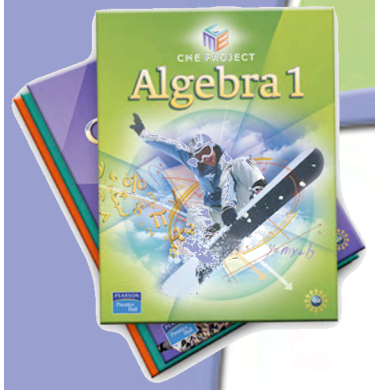

Reducing Computational Overhead

Newton's Difference Formula

x	$f(x)$	Δ	Δ^2	Δ^3	Δ^4
0	6	–15	4	48	24
1	–9	–11	52	72	24
2	–20	41	124	96	
3	21	165	220		
4	186	385			
5	571				

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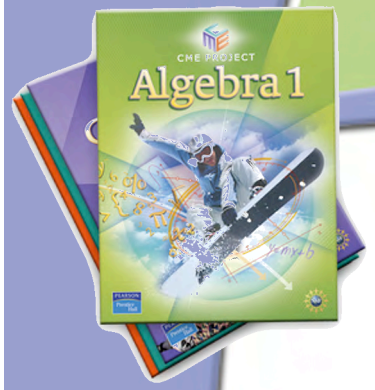

Reducing Computational Overhead

Newton's Difference Formula

x	$f(x)$	Δ	Δ^2	Δ^3	Δ^4
0	6	–15	4	48	24

$$f(x) = 6 \cdot \binom{x}{0} - 15 \cdot \binom{x}{1} + 4 \cdot \binom{x}{2} + 48 \cdot \binom{x}{3} + 24 \cdot \binom{x}{4}$$

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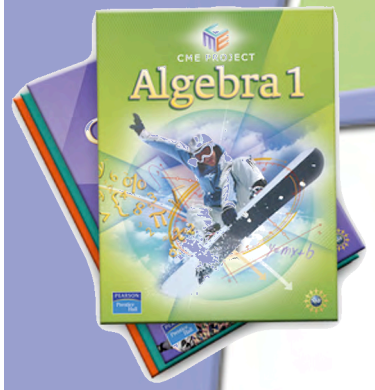

Reducing Computational Overhead

Newton's Difference Formula

- So the polynomial function that fits this table of data is

0	6
1	–9
2	–20
3	21
4	186
5	571

$$f(x) = x^4 + 2x^3 - 11x^2 - 7x + 6$$

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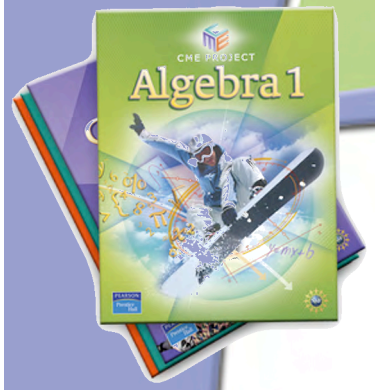

Experimenting

A New Factor Game for Precalculus

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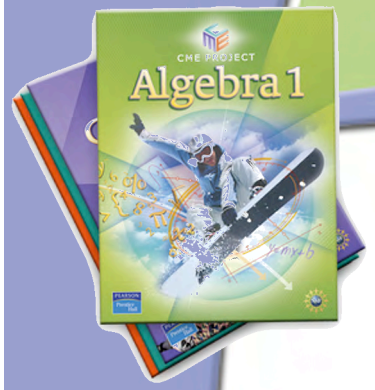

Experimenting

1.1 Playing the Factor Game

Playing the Factor Game is a fun way to practice finding factors of whole numbers. If you pay close attention, you may learn some interesting things about numbers that you didn't know before! To play the game, you need a Factor Game Board and colored pens, pencils, or markers.

active math online
For: Factor Game Activity
Visit: PHSchool.com
Web Code: and-1101

The Factor Game

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25
26	27	28	29	30

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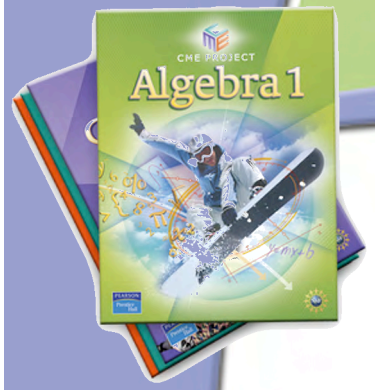

Experimenting

The Polynomial Factor Game

$x - 1$	$x^2 - 1$	$x^3 - 1$	$x^4 - 1$	$x^5 - 1$
$x^6 - 1$	$x^7 - 1$	$x^8 - 1$	$x^9 - 1$	$x^{10} - 1$
$x^{11} - 1$	$x^{12} - 1$	$x^{13} - 1$	$x^{14} - 1$	$x^{15} - 1$
$x^{16} - 1$	$x^{17} - 1$	$x^{18} - 1$	$x^{19} - 1$	$x^{20} - 1$
$x^{21} - 1$	$x^{22} - 1$	$x^{23} - 1$	$x^{24} - 1$	$x^{25} - 1$
$x^{26} - 1$	$x^{27} - 1$	$x^{28} - 1$	$x^{29} - 1$	$x^{30} - 1$

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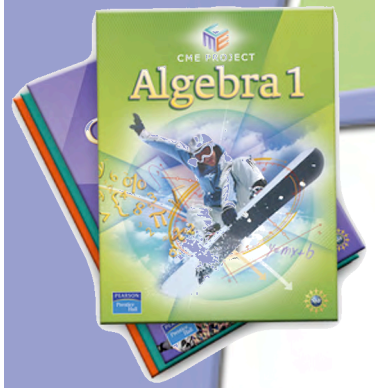

Highlighting Similarities in Algebraic Structures

The two factor games show that the underlying algebraic structure of the integers and the polynomials is similar.

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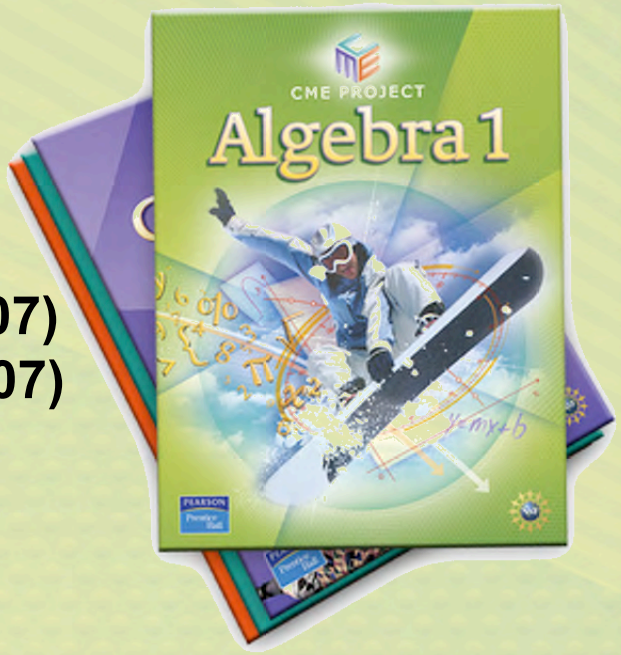
CME Project Availability Dates

- **Available right now!**
  - CME Project Algebra 1 Sampler
  - CME Project Geometry Sampler
- **Available in Summer 2007**
  - CME Project Technology Sampler
- **Available in Fall 2007**
  - CME Algebra 1 text (November 2007)
  - CME Geometry text (November 2007)
- **Available in Spring 2008**
  - CME Algebra 2 text
- **Available in Summer 2008**
  - CME Precalculus text



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CME Project

For more information

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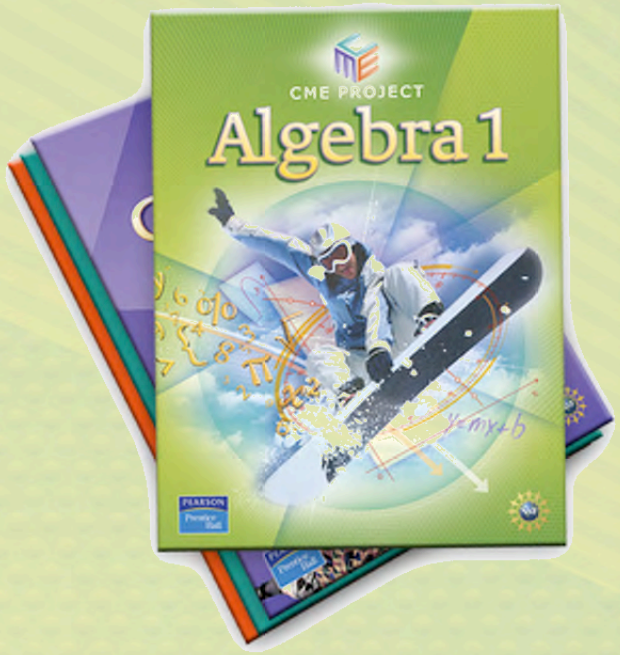

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