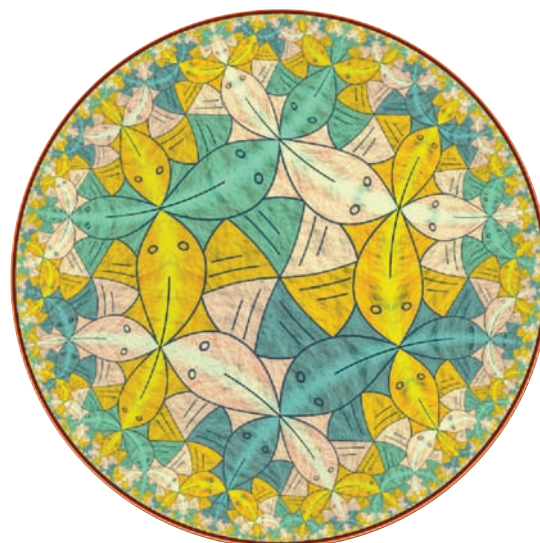


Mathematics Illuminated

> A professional development series for high school, college, and adult learners
• distance learning course

Mathematics Illuminated is a course on the theories, history, and beauty of mathematics. The series explores major themes in the field of mathematics, from mankind's earliest study of prime numbers to the cutting edge mathematics used to reveal the shape of the universe. Mathematics is presented as play we engage in to answer deep questions and also as a powerful language for uncovering and describing phenomena in the world around us. The groundbreaking videos, interactive web exploration, text materials, and group activities included in *Mathematics Illuminated* reveal the hidden delights of the ever-evolving world of mathematics. Produced by Oregon Public Broadcasting. 2008.



30-MINUTE PROGRAMS

1. The Primes

The properties and patterns of prime numbers—whole numbers that are divisible only by themselves and one—have been a source of wonder across cultures for thousands of years. This unit explores our fascination with primes, culminating in the Riemann Hypothesis, a possible description of the pattern behind the primes, and the use of the primes as the foundation of modern cryptography.

2. Combinatorics Counts

Counting is an act of organization, a listing of a collection of things in an orderly fashion. This unit looks at combinatorics, the mathematics of counting complicated configurations. In an age in which the organization of bits and bytes of data is of paramount importance—as with the human genome—combinatorics is essential.

3. How Big Is Infinity?

Throughout the ages, the notion of infinity has been a mystery and paradox. As a mathematical concept, infinity is at the heart of calculus, the notion of irrational numbers of even measurement. This unit explores how mathematics attempts to understand infinity, including the intriguing work of Georg Cantor, who initiated the study of infinity as a number, and the role of infinity in standardized measurement.

4. Topology's Twists and Turns

Topology, known as “rubber sheet math,” is a field of mathematics that concerns those properties of an object that remain the same even when the object is stretched and squashed. In this unit, we investigate topology's seminal relationship to network theory, the study of connectedness, and its critical function in understanding the shape of the universe in which we live.

5. Other Dimensions

The conventional notion of dimension consists of three degrees of freedom: length, width, and height, each of which is a quantity that can be measured independently of the others. This unit explores different aspects of the concept of dimension, what it means to have higher dimensions, and how fractional or “fractal” dimensions may be better for measuring objects such as ferns, mountains, and coastlines.

6. The Beauty of Symmetry

In mathematics, symmetry has more than just a visual or geometric quality. Mathematicians comprehend symmetries as motions whose interactions and overall structure give rise to an important mathematical concept called “group.” This unit explores Group Theory, the mathematical quantification of symmetry, which is key to understanding how to remove structure from (i.e., shuffle) a deck of cards or to fathom structure in a crystal.

7. Making Sense of Randomness

Probability is the mathematical study of randomness, or events in which the outcome is uncertain. This unit examines probability, tracing its evolution from a way to improve chances at the gaming table to modern applications of understanding traffic flow and financial markets.

8. Geometries Beyond Euclid

Our first exposure to geometry is that of Euclid, in which all triangles have 180 degrees. As it turns out, triangles can have more or less than 180 degrees. This unit explores these curved spaces that are at once otherworldly, yet firmly of this world—and present a key to understanding the human brain.

9. Game Theory

Competition and cooperation can be studied mathematically, an idea that first arose in the analysis of games like chess and checkers, but soon showed its relevance to economics and geopolitical strategy. This unit shows how conflict and strategies can be thought about mathematically and help reveal important insights about human and even animal behaviors.

10. Harmonious Math

The mathematical technique for understanding sound and other wave phenomena is called the Fourier analysis, which allows the disentangling of a complex wave into basic waves. In this unit, we discover how the Fourier analysis is used in creating electronic music and underpins all digital technology.

11. Connecting with Networks

Connections can be physical, as with bridges, or intangible, as with friendships. Both types of connections can be understood using the same mathematical framework called network theory, or graph theory, which is a way to abstract and quantify the notion of connectivity. This unit looks at how this branch of mathematics provides insights into extremely complicated networks, such as ecosystems.

12. In Sync

The regular beating of the human heart and the simultaneous flashing of gangs of fireflies in Southeast Asia share the property of spontaneous synchronization. This unit shows how synchronization can be analyzed, studied, and modeled via the mathematics of differential equations, an outgrowth of calculus. The application of these ideas leads us toward understanding the workings of the heart.

13. The Concepts of Chaos

The flapping of a butterfly's wings over Bermuda causing a rainstorm in Texas exemplifies the phenomenon of chaos. Chaos is characterized by a widely sensitive dependence of the future on slight changes in a system's initial conditions. This unit explores the mathematics of chaos, which involves finding structure in what initially appears to be random, and imposes limits on predictability.

Prices

Video

DVD-R [MADVD] \$375.00
13 half-hour programs on 4 discs

Guides

Course Facilitator Guide \$44.95
Course Participant Guide \$44.95

DIGITAL DOWNLOAD entire series \$350.00

Web Site

 www.learner.org/courses/mathilluminated

Insights Into Algebra 1: Teaching for Learning

> A professional development video workshop for middle and high school
• 2 graduate credits

This professional development workshop explores strategies to improve how 16 topics found in most Algebra 1 programs are taught. Each video includes two lessons that showcase effective strategies for teaching. The workshop guide provides activities to help teachers examine their practice and incorporate what they are learning into their daily lessons. Produced by Thirteen/WNET. 2004.



Janel Green uses a swimming pool problem to help her students understand and make connections between words and symbols as used in algebraic situations.

60-MINUTE PROGRAMS

- | | |
|--|---------------------------------|
| 1. Variables and Patterns of Change | 5. Properties |
| 2. Linear Functions and Inequalities | 6. Exponential Functions |
| 3. Systems of Equations and Inequalities | 7. Direct and Inverse Variation |
| 4. Quadratic Functions | 8. Mathematical Modeling |

Prices

Video

DVD-R [IADVDRK] \$220.00
8 one-hour programs on 4 discs, 1 guide

Guides

Professional Development Workshop Guide..... \$39.95

DIGITAL DOWNLOAD entire series..... \$200.00

Web Site

www.learner.org/workshops/algebra

Algebra: In Simplest Terms

> An instructional series for high school, college, and adult learners
• distance learning course

This series explains the sometimes baffling concepts of algebra. Series host Sol Garfunkel explains why this branch of mathematics is necessary for solving real-world problems. With this visual textbook, students and adult learners will grasp the concepts behind the abstract equations and learn the language of algebra. This series has applications in geometry and calculus instruction. Produced by the Consortium for Mathematics and Its Applications and Chedd-Angier. 1991.



Series host Sol Garfunkel

30-MINUTE PROGRAMS

- | | | | |
|----------------------------|------------------------|---------------------------------------|-------------------------------------|
| 1. Introduction | 6. Complex Numbers | 11. Circle and Parabola | 20. Systems of Equations |
| 2. The Language of Algebra | 7. Quadratic Equations | 12. Ellipse and Hyperbola | 21. Systems of Linear Inequalities |
| 3. Exponents and Radicals | 8. Inequalities | 13. Functions | 22. Arithmetic Sequences and Series |
| 4. Factoring Polynomials | 9. Absolute Value | 14. Composition and Inverse Functions | 23. Geometric Sequences and Series |
| 5. Linear Equations | 10. Linear Relations | 15. Variation | 24. Mathematical Induction |
| | | 16. Polynomial Functions | 25. Permutations and Combinations |
| | | 17. Rational Functions | 26. Probability |
| | | 18. Exponential Functions | |
| | | 19. Logarithmic Functions | |

Prices

Video

DVD-R [ALDVDR] \$389.00
26 half-hour programs on 7 discs

DIGITAL DOWNLOAD entire series..... \$350.00

Coordinated books are also available. Go to www.learner.org or call 1-800-LEARNER®.

Learning Math Patterns, Functions, and Algebra

> A professional development course for elementary and middle school teachers • 3 graduate credits

Part of the NCTM standards-based series *Learning Math*, this course explores the big ideas in algebraic thinking, such as finding, describing, and using patterns; using functions to make predictions; understanding linearity and proportional reasoning; understanding nonlinear functions; and understanding and exploring algebraic structure. Produced by WGBH Boston. 2001.



Learning Math features non-mathematics teachers approaching mathematical topics in depth.

30-MINUTE PROGRAMS

- | | |
|-------------------------------|--|
| 1. Algebraic Thinking | 8. More Non-Linear Functions |
| 2. Patterns in Context | 9. Algebraic Structure |
| 3. Functions and Algorithms | 10. Classroom Case Studies, Grades K-2 |
| 4. Proportional Reasoning | 11. Classroom Case Studies, Grades 3-5 |
| 5. Linear Functions and Slope | 12. Classroom Case Studies, Grades 6-8 |
| 6. Solving Equations | |
| 7. Non-Linear Functions | |

Prices

Video

DVD-R [LMADVDRK] \$240.00
12 half-hour programs on 4 discs, 1 guide

Guides

Professional Development Course Guide..... \$39.95

DIGITAL DOWNLOAD entire series \$200.00

Web Site

 www.learner.org/courses/learningmath/algebra

Learning Math Number and Operations

> A professional development course for elementary and middle school teachers • 3 graduate credits

This course examines the three main categories in the Number and Operations strand of the NCTM Principles and Standards of School Mathematics. The video programs cover the real number system, place value, the behavior of zero and infinity, meanings and models of basic operations, percentages, and modeling operations with fractions. Topics are explored in-depth, with both practical examples and more abstract concepts providing teachers with the higher mathematics behind the basic topics they teach. Produced by WGBH Educational Foundation. 2003



Professor Carol Findell introduces manipulatives for solving problems.

30-MINUTE PROGRAMS

- | | |
|---------------------------------------|--|
| 1. What Is a Number System? | 7. Fractions and Decimals |
| 2. Number Sets, Infinity, and Zero | 8. Rational Numbers and Proportional Reasoning |
| 3. Place Value | 9. Fractions, Percents, and Ratios |
| 4. Meanings and Models for Operations | 10. Classroom Case Studies, K-2 |
| 5. Divisibility Tests and Factors | 11. Classroom Case Studies, 3-5 |
| 6. Number Theory | 12. Classroom Case Studies, 6-8 |

Prices

Video

DVD-R [LMNDVDRK] \$310.00
12 half-hour programs on 4 discs, 1 guide

Guides

Professional Development Course Guide..... \$39.95

DIGITAL DOWNLOAD entire series \$300.00

Web Site

 www.learner.org/courses/learningmath/number

Learning Math Data Analysis, Statistics, and Probability

> A professional development course for K–8 teachers • 3 graduate credits

This course introduces statistics as a problem-solving process. Increase your understanding through investigations of different ways to collect and represent data and to analyze and interpret variation in data. Through practical examples, come to understand statistical concepts, such as data representation, variation, the mean and median, bivariate data, probability, designing statistical experiments, and population estimations. Produced by WGBH Educational Foundation. 2001.



A line plot helps teachers visualize variation in data.

Prices

Video

DVD-R [LMDDVDRK]\$240.00
11 half-hour programs on 4 discs, 1 guide

Guides

Professional Development Course Guide.....\$39.95

DIGITAL DOWNLOAD entire series.....\$200.00

Web Site

www.learner.org/courses/learningmath/data

30-MINUTE PROGRAMS

- | | |
|---|--|
| 1. Statistics As Problem Solving | 8. Probability |
| 2. Data Organization and Representation | 9. Random Sampling and Estimation |
| 3. Describing Distributions | 10. Classroom Case Studies: Grades K-2 |
| 4. The Five-Number Summary | 11. Classroom Case Studies: Grades 3-5 and 6-8 |
| 5. Variation About the Mean | |
| 6. Designing Experiments | |
| 7. Bivariate Data and Analysis | |

Interactives

More on Statistics at
www.learner.org/interactives



Against All Odds: Inside Statistics

> An instructional series for high school, college, and adult learners
• distance learning course

With an emphasis on “doing” statistics, this series goes on location to help uncover statistical solutions to the puzzles of everyday life. Learn how data collection and manipulation—paired with intelligent judgment and common sense—can lead to more informed decision-making. This series can also be used as a resource for teacher professional development. Produced by the Consortium for Mathematics and Its Applications and Chedd-Angier. 1989.

Prices

Video

DVD-R [AADVDR]\$389.00
26 half-hour programs on 7 discs

DIGITAL DOWNLOAD entire series.....\$350.00

Coordinated books are also available. Go to www.learner.org or call 1-800-LEARNER®.

Web Site

www.learner.org/exhibits/statistics



Series host Teresa M. Amabile

30-MINUTE PROGRAMS

- | | |
|------------------------------------|--|
| 1. What Is Statistics? | 14. Samples and Surveys |
| 2. Picturing Distributions | 15. What Is Probability? |
| 3. Describing Distributions | 16. Random Variables |
| 4. Normal Distributions | 17. Binomial Distributions |
| 5. Normal Calculations | 18. The Sample Mean and Control Charts |
| 6. Time Series | 19. Confidence Intervals |
| 7. Models for Growth | 20. Significance Tests |
| 8. Describing Relationships | 21. Inference for One Mean |
| 9. Correlation | 22. Comparing Two Means |
| 10. Multidimensional Data Analysis | 23. Inference for Proportions |
| 11. The Question of Causation | 24. Inference for Two-Way Tables |
| 12. Experimental Design | 25. Inference for Relationships |
| 13. Blocking and Sampling | 26. Case Study |

Learning Math Geometry

> A professional development course for elementary and middle school teachers • 3 graduate credits

This course uses geometric reasoning as a method for problem solving. Explore the properties of geometric figures; make constructions using pencil and paper, and also use dynamic software; and practice using mathematical language to express ideas and justify your reasoning. Explore other important geometric ideas, such as symmetry, similarity, and trigonometry, as well as the basis of formal mathematical proofs and solid geometry. The course material progresses from visual, intuitive ways of solving problems to more formal explorations of geometric ideas, properties, and proofs. Produced by WGBH Educational Foundation. 2003.



Michelle Manes holds up a shape for participants to draw from memory.

30-MINUTE PROGRAMS

- | | |
|---------------------------------|---|
| 1. What Is Geometry? | 7. Symmetry |
| 2. Triangles and Quadrilaterals | 8. Similarity |
| 3. Polygons | 9. Solids |
| 4. Parallel Lines and Circles | 10. Classroom Case Studies, K–5 |
| 5. Dissections and Proof | 11. Classroom Case Studies, 6–8, Part 1 |
| 6. The Pythagorean Theorem | 12. Classroom Case Studies, 6–8, Part 2 |

Prices

- Video**
- DVD-R [LMGDVDRK] \$310.00
12 half-hour programs on 4 discs, 1 guide
- Guides**
- Professional Development Course Guide..... \$39.95
- DIGITAL DOWNLOAD** entire series..... \$300.00

Web Site

www.learner.org/courses/learningmath/geometry



More on 3D Shapes at www.learner.org/interactives

Learning Math Measurement

> A professional development course for elementary and middle school teachers • 3 graduate credits

Part of the NCTM standards-based *Learning Math* series, this course explores procedures for measuring and covers standard units, the relationships among units, and the approximate nature of measurement. Examine how measurement can illuminate concepts such as irrational numbers, properties of circles, and area and volume formulas, and discover how other mathematical concepts can inform measurement tasks. Produced by WGBH Educational Foundation. 2002.



Teachers prepare to make a scale drawing on paper.

30-MINUTE PROGRAMS

- | | |
|--|---------------------------------------|
| 1. What Does It Mean To Measure? | 6. Area |
| 2. Fundamentals of Measurement | 7. Circles and Pi (π) |
| 3. The Metric System | 8. Volume |
| 4. Angle Measurement | 9. Measurement Relationships |
| 5. Indirect Measurement and Trigonometry | 10, 11, or 12. Classroom Case Studies |

Prices

- Video**
- DVD-R [LMMDVDRK] \$310.00
12 half-hour programs on 4 discs, 1 guide
- Guides**
- Professional Development Course Guide..... \$39.95
- DIGITAL DOWNLOAD** entire series..... \$300.00

Web Site

www.learner.org/courses/learningmath/measurement

Teaching Math: A Video Library, 5–8

> A professional development library for middle school teachers

See real middle school teachers incorporating the NCTM standards into their lessons, while learning as much about teaching as their students do about math. The programs demonstrate how teachers guide and assess student understanding. They also offer strategies for keeping students motivated and engaged as they learn mathematics at this critical age. Produced by WGBH Boston. 1997.



Pre-algebra students study linear relationships.

15-MINUTE PROGRAMS

1. Fraction Tracks

Using a board game, a fifth-grade class studies and practices fractions and equivalent fractions.

2. Hexominoes

A fifth-grade class studies geometry by creating hexominoes, figures made up of six squares.

3. The Location

A sixth-grade teacher uses a secret location game to teach the class about statistics, connections, and reasoning.

4. Building Viewpoints

Seventh-graders learn about spatial sense and geometry from a blueprint of ancient buildings. They then create their own three-dimensional models and draw them from different viewpoints.

5. The Largest Container

Seventh- and eighth-grade students work on geometry and measurement as they attempt to create the largest container from a single sheet of paper.

6. Building Rafts With Rods

Groups of students learn about patterns, functions, and problem-solving as they calculate the surface area and volume of various-sized rafts, then graph their data.

Prices

Video

DVD-R [TM5DVDRK] \$125.00
6 fifteen-minute programs on 1 disc, 1 guide

Guides

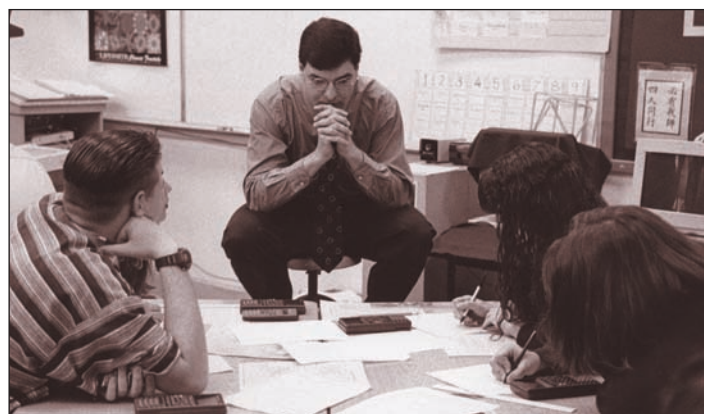
Professional Development Library Guide \$17.00

DIGITAL DOWNLOAD entire series \$100.00

Teaching Math: A Video Library, 9–12

> A video library for grade 9–12 teachers

In this high school library, teachers demonstrate the fine art of guiding students through reasoning and problem solving. Students comment on the new way of learning, often expressing frustration as well as the sense of accomplishment they feel when working through problems with peers. Produced by WGBH Boston. 1996.



Group testing in an algebra/trigonometry class.

PROGRAMS

1. Introduction

Content Standards—15-MINS.

2. Alice to the Moon

(algebra)

3. Group Test (functions)

4. Exploring Functions (functions)

5. Bungee Jump (functions)

6. Staircase Problem

(functions)

7. Ferris Wheel (functions)

8. Properties of Parallelograms

(geometry synthetic)

9. Finding Proof (geometry synthetic)

10. Exploring Congruence

(geometry synthetic)

11. Enveloping Functions

(trigonometry)

12. Calculator-Based Labs (statistics)

13. Taxicabs (probability)

14. Fish Derby

(discrete math)

15. Maximizing Profits

(discrete math)

16. Conjectures Through Graphing

(calculus)

Process Standards—30-MINS.

17. Problem Solving

18. Communication

19. Reasoning

20. Connections

Prices

Video

DVD [TM9DVDRK] \$250.00
20 video programs on 4 discs, 1 guide

Guides

Professional Development Library Guide \$25.00

DIGITAL DOWNLOAD entire series \$200.00

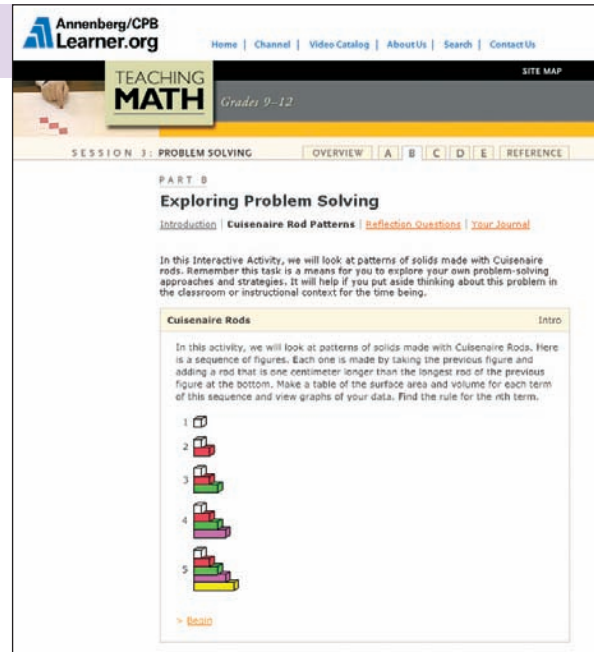
TeACHing MATH Free Online Courses

The *Teaching Math* online courses provide pre-service and in-service teachers with an overview and exploration of the National Council of Teachers of Mathematics process standards.

There are four courses, one each for the four NCTM grade bands: pre-kindergarten–2, 3–5, 6–8, and 9–12. Each session includes text, illustrations, animations, video, and interactive activities. Two graduate credits. Go to www.learner.org.

Web Site

- www.learner.org/courses/teachingmath/gradesk_2
- www.learner.org/courses/teachingmath/grades3_5
- www.learner.org/courses/teachingmath/grades6_8
- www.learner.org/courses/teachingmath/grades9_12



Teaching Math: A Video Library, K–4

> A professional development library for elementary school teachers

Watch the excitement of young children as they solve problems, communicate, reason, and make connections between math and their physical world. This extraordinary video library documents effective teaching and learning in many sizes and types of schools: small, large, rural, suburban, inner-city, and with and without technology. Produced by WGBH Boston. 1995.

15-MINUTE PROGRAMS

1. Introduction

Content Standards

Number Sense and Numeration

- 2. K Ants Go Marching
- 3. K Math Buddies
- 4. 1 Place-Value Centers
- 5. 1–2 Pumpkin Seeds
- 6. 4–5 Animals in Yellowstone

Concepts of Whole Number Operations

- 7. K Cubes and Containers
- 8. 1 Amazing Equations
- 9. 1–2 Domino Math
- 10. 2 Marshmallows
- 11. 3 What's the Price?

Whole Number Computation

- 12. K Dino Math
- 13. 1 Window Puzzle
- 14. 1 Wheel Problem
- 15. 2 Bean Sprouts
- 16. 2–3 This Small House
- 17. 4 Choose a Method

Geometry and Spatial Sense

- 18. 1 Thanksgiving Quilt
- 19. 2 Pattern Blocks
- 20. 2–3 Shapes from Squares
- 21. 2–3 A Rocket Shape
- 22. 4 Circumference/ Diameter

Measurement

- 23. 1 Windows, Dinos, and Ants
- 24. 1 How Long Is a Minute?
- 25. 2–3 Balloon Travel
- 26. 3–4 Meter Cords
- 27. 4 Pencil Box Staining

Statistics and Probability

- 28. 1 Lady Bugs
- 29. 1–2 Woodpecker Habitat
- 30. 3 Bubble Gum Contest
- 31. 4 Dice Toss
- 32. 4–6 Questioning Data



Students estimate the number of marshmallows required for a class camping trip.

Fractions and Decimals

- 33. 1–2 Fraction Strips
- 34. 1–3 Arrays and Fractions
- 35. 2–3 Everyday Decimals
- 36. 4 Cookies to Share
- 37. 4–5 Fractions With Geoboards

Patterns and Relationships

- 38. K People Patterns
- 39. K–1 All Sorts of Buttons
- 40. 2 Story-Based Centers
- 41. 4 Products and Sums
- 42. 4 Valentine Exchange

Estimation

- 43. K Beans, Beans, Beans
- 44. 1 How Many People Will Fit?
- 45. 2 Cranberry Estimation
- 46. 3 Buffalo Estimation
- 47. 4 The White Pages

Process Standards—30 MINS.

- 48. Problem Solving
- 49. Communication
- 50. Reasoning
- 51. Mathematical Connections
- 52. Classrooms Over Time

Prices

Video

DVD [TM4DVDRK] \$375.00
52 programs (varying lengths) on 11 discs, 1 guide

Guides

Professional Development Library Guide \$39.95

DIGITAL DOWNLOAD entire series \$350.00

Mathematics Assessment: A Video Library, K-12

> A professional development library for K-12 teachers

This video library portrays the Assessment Standards of the National Council of Teachers of Mathematics. Showing classrooms where informal and formal assessments are used, the videos help educators sort through many options. They also help teachers see the link between instruction and assessment. Produced by WGBH Boston. 1997.

PROGRAMS

1. Introduction—10 MINS.

Provides an overview of the library and issues covered.

School-Level Videos—60 MINS.

Each one-hour program contains two case studies and a sequence of teacher insights that shows a variety of assessment techniques.

2. Elementary Assessment

3. Middle School Assessment

4. High School Assessment

5. Beyond Testing—30 MINS.

This program addresses questions such as equity, openness, validity, and consistency at the state, district, and school levels. It will also help spur discussions on assessment with educators and community members.



Prices

Video

DVD [TMADVDRK] \$220.00
5 video programs (varying lengths) on 3 discs, 1 guide

Guides

Professional Development Library Guide \$39.95

DIGITAL DOWNLOAD entire series \$200.00

The Missing Link: Essential Concepts for Middle School Math Teachers

> A professional development workshop for middle school teachers • 2 graduate credits

This workshop explores four concepts identified by TIMSS (the Third International Mathematics and Science Study) as crucial to students' future success. Learn about these math topics through instructional techniques that strive to involve students in their own learning. In the "Discovery" session of each topic pair, Master Teacher Jan Robinson (from the First in the World Consortium) leads the on-camera "learner teachers" as they investigate a series of problem-based activities. The learner teachers customize and expand upon these lessons in their own classrooms and return with samples of their students' work. In the "In Practice" sessions, they report on their experiences, evaluate student work, and develop new instructional and assessment techniques.

Produced by A-Plus Communications and Lavine Production Group. 2000.

60-MINUTE PROGRAMS

1. Proportionality and Similar Figures: Discovery

2. Proportionality and Similar Figures: In Practice

3. Patterns and Functions: Discovery

4. Patterns and Functions: In Practice

5. Polygons and Angles: Discovery

6. Polygons and Angles: In Practice

7. Sampling and Probability: Discovery

8. Sampling and Probability: In Practice



Teachers experience group work before taking it to their classrooms.

Prices

Video

DVD-R [MLDVDRK] \$220.00
8 one-hour programs on 4 discs, 1 guide

Guides

Professional Development Workshop Guide \$39.95

DIGITAL DOWNLOAD entire series \$200.00

Web Site

 www.learner.org/workshops/missinglink

Private Universe Project in Mathematics



Even the youngest students can explain complex mathematical thinking when encouraged over time.

60-MINUTE PROGRAMS

- | | |
|--|--|
| 1. Following Children's Ideas in Mathematics | 4. Thinking Like a Mathematician |
| 2. Are You Convinced? | 5. Building on Useful Ideas |
| 3. Inventing Notations | 6. Possibilities of Real-Life Problems |

> A professional development workshop for K–12 educators • 2 graduate credits

Research shows that children formulate extraordinarily interesting and complex mathematical ideas, even at a very young age. The *Private Universe Project in Mathematics* demonstrates and honors the power and sophistication of these ideas, and explores how mathematics teaching can be structured to resonate with children's sophisticated thinking. This six-program workshop, with a companion interactive Website, offers a rare opportunity to follow the mathematical development of one group of students throughout grades 1–12 and to observe teachers in the process of redefining what mathematics is for themselves and for their students. Produced by the Harvard-Smithsonian Center for Astrophysics. 2000.

Prices

Video

DVD-R [PMDVDRK] \$149.00
6 one-hour programs on 3 discs, 1 guide

Guides

Professional Development Workshop Guide. \$39.95

DIGITAL DOWNLOAD entire series \$100.00

Web Site

www.learner.org/workshops/pupmath

Surprises in Mind

> A video documentary for K–8 teachers and administrators

Many people—in and out of school—find mathematics frustrating, difficult, even impossible. This documentary uncovers a surprise: Mathematical creativity—expressed in art, architecture, and music and valued by industry—is built into the brain and can flourish under the right conditions. A remarkable 12-year study following students from first grade through high school demonstrates the brain's surprising natural abilities for learning math. The results of the study, led by Professor Carolyn Maher of Rutgers University, have been corroborated by new research from leading cognitive psychologists. Produced by the Harvard-Smithsonian Center for Astrophysics. 2001.

Surprises in Mind
ONE 60-MINUTE PROGRAM

Prices

Video

DVD-R [URDVDRK] \$39.95
1 hour program on 1 disc

DIGITAL DOWNLOAD \$35.95



Blocks are a tool used to nurture young children's natural mathematical abilities.