

Mathematics

Numbers in parentheses are the Quick Launch numbers.

▶ **INTRODUCTORY ALGEBRA: Number Sense**

InterActivity: Math InterActive Tools (1244)

Web Inquiry: What are perfect numbers and how are they determined? (81)

Audio Inquiry: Real Number Hierarchy (1284)

Classroom Activity: Pairs and Primes (1012)

Web Lesson: Cryptography (488)

Project: Is This Number Exact or Approximate? Is It Accurate or Precise? (280)

Web Resources: Number Sense: Internet Sites (710)

▶ **INTRODUCTORY ALGEBRA: Equations & Inequalities**

InterActivity: Math InterActive Tools (1244)

InterActivity: Tools for Equations & Inequalities (962)

Simplifier: Order of Operations | Simplifier: Polynomials | Solver: How to Solve

Solver: Linear Inequalities | Solver: Simple Equations

Web Inquiry: When solving equations, how can you know if your answers are correct before your teacher does? (82)

Audio Inquiry: Solving Absolute Value Equations (1285)

Classroom Activity: From Words to Equations and Back Again (1013)

Web Lesson: Solving Linear Equations (489)

Project: Solving and Graphing Inequalities (281)

Web Resources: Equations & Inequalities: Internet Sites (711)

▶ **INTRODUCTORY ALGEBRA: Coordinate Geometry**

InterActivity: Math InterActive Tools (1244)

InterActivity: Tools for Coordinate Geometry (963)

Distance: 1, 2 & 3 Dimensions | Exploring Transformations | Grapher: Coordinate Plane

Graphing Dilations | Graphing Reflections | Graphing Rotations | Graphing Translations

Web Inquiry: What does graphing points have to do with locations on maps? (83)

Audio Inquiry: Slope (1352)

Classroom Activity: Centroid of a Triangle (1014)

Web Lesson: Predicting Earthquakes through Graphs (490)

Project: Distance Formula in Washington, DC (282)

Web Resources: Coordinate Geometry: Internet Sites (712)

► **INTRODUCTORY ALGEBRA: Linear Equations & Inequalities**

InterActivity: Math InterActive Tools (1244)

InterActivity: Tools for Linear Equations & Inequalities (964)

Grapher: Linear Equations | Grapher: Linear Inequalities | Grapher: Special Functions (Explore)

Solver: Linear Inequalities | Solver: Simple Equations

Web Inquiry: Now that I can color outside the lines, how do I decide *which* side of a line to color? (84)

Audio Inquiry: Vertical and Horizontal Lines (1287)

Classroom Activity: Slope of Handicap Ramps (1015)

Web Lesson: Parallel or Perpendicular? (491)

Project: Exploring Rates of Change (283)

Web Resources: Linear Equations & Inequalities: Internet Sites (713)

► **INTRODUCTORY ALGEBRA: Rational Expressions**

InterActivity: Math InterActive Tools (1244)

InterActivity: Tools for Rational Expressions (965)

Grapher: Special Functions (Explore) | Simplifier: Order of Operations | Simplifier: Factoring | Simplifier: Rationals

Web Inquiry: How are rational expressions simplified? (85)

Audio Inquiry: Division by Zero (1288)

Classroom Activity: Rational Scale Factors (1016)

Web Lesson: Exploring Variations (492)

Project: Graphing Rational Functions (284)

Web Resources: Rational Expressions: Internet Sites (714)

► **INTRODUCTORY ALGEBRA: Radical Expressions**

InterActivity: Math InterActive Tools (1244)

InterActivity: Tools for Radical Expressions (966)

Grapher: Special Functions (Explore) | Simplifier: Order of Operations | Simplifier: Radicals

Web Inquiry: What are powers and roots and how are they related? (86)

Audio Inquiry: Simplified Radicals (1289)

Classroom Activity: Measuring the Diagonal of a Classroom (1017)

Web Lesson: A Scavenger Hunt on Radicals (493)

Project: Radicals ... Applied! (285)

Web Resources: Radical Expressions: Internet Sites (715)

► **INTRODUCTORY ALGEBRA: Polynomials & Factoring**

InterActivity: Math InterActive Tools (1244)

InterActivity: Tools for Polynomials & Factoring (967)

Simplifier: Factoring | Simplifier: Polynomials

Web Inquiry: How are polynomials added and subtracted? (87)

Audio Inquiry: Evaluating Expressions (1292)

Classroom Activity: Polynomials and Perimeters (1018)

Web Lesson: A Few Words on Factoring (494)

Project: Factor Away! (286)

Web Resources: Polynomials & Factoring: Internet Sites (716)

▶ INTRODUCTORY ALGEBRA: Systems of Equations

InterActivity: Math InterActive Tools (1244)

InterActivity: Tools for Systems of Equations (968)

Grapher: Linear Equations | Grapher: Linear Inequalities | Grapher: Systems of Linear Equations

Grapher: Systems of Linear Inequalities | Solver: Linear Systems

Web Inquiry: What is the significance of the break-even point and how can it be found? (88)

Audio Inquiry: Systems of Linear and Nonlinear Equations (1290)

Classroom Activity: Producing Crunch Berries Cereal (1019)

Web Lesson: Using Systems of Equations to Make Money (495)

Project: Which Method Is Best? (287)

Web Resources: Systems of Equations: Internet Sites (717)

▶ INTRODUCTORY ALGEBRA: Quadratic Functions

InterActivity: Math InterActive Tools (1244)

InterActivity: Tools for Quadratic Functions (969)

Grapher: Quadratic Functions | Simplifier: Factoring | Solver: Quadratic Equations

Web Inquiry: What can the discriminant indicate about a quadratic equation and its graph? (891)

Audio Inquiry: Real-World Examples of Quadratic Functions (1291)

Classroom Activity: The Highs and Lows of a Quadratic Function (1169)

Web Lesson: It's Your Move (922)

Project: The Best Use of Your Time (912)

Web Resources: Quadratic Functions: Internet Sites (902)

▶ INTERMEDIATE ALGEBRA: Powers, Roots & Absolute Value

InterActivity: Math InterActive Tools (1245)

InterActivity: Tools for Powers, Roots & Absolute Value (1211)

Grapher: Absolute Value Equations & Inequalities (Explore) | Grapher: Absolute Value Equations & Inequalities (Practice & Quiz)

Simplifier: Complex Numbers

Web Inquiry: When an expression has many exponents, what are the rules for simplifying it? (89)

Classroom Activity: Relatively Speaking (1020)

Web Lesson: What is Happening to My Absolute Value Parent? (496)

Project: Discovering the Period of a Pendulum (288)

Web Resources: Powers, Roots & Absolute Value: Internet Sites (718)

▶ INTERMEDIATE ALGEBRA: Quadratic Equations & Inequalities

InterActivity: Math InterActive Tools (1245)

InterActivity: Tools for Quadratic Equations & Inequalities (1212)

Grapher: Quadratic Functions | Grapher: Quadratic Inequalities (Explore) | Grapher: Quadratic Inequalities (Practice & Quiz)

Simplifier: Complex Numbers | Solver: Quadratic Equations | Solver: Quadratic Inequalities

Web Inquiry: How do the solutions for two-variable and one-variable quadratic inequalities differ? (90)

Classroom Activity: Playing Jeopardy with the Roots of a Quadratic Equation (1021)

Web Lesson: Quadratic Functions: Two for the Graph of One (497)

Project: Real-world Quadratic (289)

Web Resources: Quadratic Equations & Inequalities: Internet Sites (719)

► **INTERMEDIATE ALGEBRA: Polynomial Functions**

InterActivity: Math InterActive Tools (1245)

InterActivity: Tools for Polynomial Functions (1213)
Grapher: Polynomial Functions (Explore)

Web Inquiry: Why are the Remainder Theorem and the Factor Theorem important for polynomial functions? (91)

Classroom Activity: Polynomial Patterns (1022)

Web Lesson: Seeing is believing (498)

Project: Binomial Factoring vs. Binomial Expansion (290)

Web Resources: Polynomial Functions: Internet Sites (720)

► **INTERMEDIATE ALGEBRA: Rational Functions**

InterActivity: Math InterActive Tools (1245)

InterActivity: Tools for Rational Functions (1214)
Grapher: Special Functions (Explore)

Web Inquiry: What information does the equation of a rational function tell about its graph? (92)

Classroom Activity: Properties of Rational Functions (1023)

Web Lesson: In Focus: Applications of Rational Functions (499)

Project: Rational Functional Models: The Mo\$t for Your Dollar (291)

Web Resources: Rational Functions: Internet Sites (721)

► **INTERMEDIATE ALGEBRA: Functions**

InterActivity: Math InterActive Tools (1245)

InterActivity: Tools for Functions (1215)
Grapher: Piecewise Functions (Explore) | Grapher: Special Functions (Explore)

Web Inquiry: How can you classify functions as even, odd, or neither? (93)

Classroom Activity: Does Your Inverse Function? (1024)

Web Lesson: Domains of Composite Functions (500)

Project: Home Run Derby (292)

Web Resources: Functions: Internet Sites (722)

► **INTERMEDIATE ALGEBRA: Introductory Matrices**

InterActivity: Math InterActive Tools (1245)

Web Inquiry: How is the determinant of a matrix evaluated? (94)

Classroom Activity: Matrix Operations: Associative or Commutative? (1025)

Web Lesson: Matrices and Systems (501)

Project: Cryptography and Matrices (293)

Web Resources: Introductory Matrices: Internet Sites (723)

▶ **INTERMEDIATE ALGEBRA: Exponential & Logarithmic Functions**

InterActivity: Math InterActive Tools (1245)

InterActivity: Tools for Exponential & Logarithmic Functions (1217)
Grapher: Special Functions (Explore)

Web Inquiry: How can the rate of change of an exponential function be described? (95)

Classroom Activity: Logarithms Function with pH (1026)

Web Lesson: Explorations in Logarithms (502)

Project: The AIDS Epidemic (294)

Web Resources: Exponential & Logarithmic Functions: Internet Sites (724)

▶ **INTERMEDIATE ALGEBRA: Sequences & Series**

InterActivity: Math InterActive Tools (1245)

Web Inquiry: What are the advantages and disadvantages of using sigma notation? (96)

Classroom Activity: Monster Curves (1027)

Web Lesson: Towers of Hanoi (503)

Project: Exploring Sequences (295)

Web Resources: Sequences & Series: Internet Sites (725)

▶ **ADVANCED ALGEBRA: Conics**

Web Inquiry: How can factoring help me graph hyperbolas? (97)

Classroom Activity: A Three Point Circle (1028)

Web Lesson: Satellite Orbits (504)

Project: Conics in Polar Form (296)

Web Resources: Conics: Internet Sites (726)

▶ **ADVANCED ALGEBRA: Exponential & Logarithmic Functions**

Web Inquiry: Why are both common logarithms and natural logarithms necessary for applications today? (98)

Classroom Activity: Newton's Law of Cooling (1029)

Web Lesson: Intensity of an Earthquake (505)

Project: Discovering e (297)

Web Resources: Exponential & Logarithmic Functions: Internet Sites (727)

▶ **ADVANCED ALGEBRA: Polynomials**

Web Inquiry: Of what use are polynomials outside the math classroom? (99)

Classroom Activity: Going to Extremes (1030)

Web Lesson: Zeros and End Behavior of Polynomial Functions (506)

Project: Figurate Numbers (298)

Web Resources: Polynomials: Internet Sites (728)

▶ **ADVANCED ALGEBRA: Principles of Counting**

- Web Inquiry:** What patterns in Pascal's triangle can help you expand a binomial expression? (100)
- Classroom Activity:** $N \times N$ Non-taking Rooks (1031)
- Web Lesson:** Musical Dice Game (507)
- Project:** Decisions, Decisions (299)
- Web Resources:** Principles of Counting: Internet Sites (729)

▶ **ADVANCED ALGEBRA: Recursion & Induction**

- Web Inquiry:** How could you use recursion to convince your best friend not to start smoking? (101)
- Classroom Activity:** Map-Matical Induction (1032)
- Web Lesson:** FibonNature Numbers (508)
- Project:** SierPascal's Triangle? (300)
- Web Resources:** Recursion & Induction: Internet Sites (730)

▶ **ADVANCED ALGEBRA: Sequences & Series**

- Web Inquiry:** What does the phrase *limit of a sequence* mean and how can it be used in the real world? (102)
- Classroom Activity:** Traffic Jam (1033)
- Web Lesson:** Infinitely Interesting Series (509)
- Project:** Zeno's Paradoxes (301)
- Web Resources:** Sequences & Series: Internet Sites (731)

▶ **ADVANCED ALGEBRA: Theory of Equations**

- Web Inquiry:** When must I check my answers and why? (103)
- Classroom Activity:** Relationship between Factors and Roots (1034)
- Web Lesson:** Bisection Theorem (510)
- Project:** Solving Rational Inequalities (302)
- Web Resources:** Theory of Equations: Internet Sites (732)

▶ **GEOMETRY: Points, Lines & Planes**

- InterActivity:** Math InterActive Tools (1308)
- InterActivity:** Tools for Points, Lines & Planes (13)
Distance: 1, 2 & 3 Dimensions
- Web Inquiry:** How do you know when an object is symmetrical to a line or around a point? (104)
- Audio Inquiry:** Midpoint Formula (1286)
- Classroom Activity:** Lines in Multiple Environments (1035)
- Web Lesson:** Four Points about Point (511)
- Project:** Literary Uses of Points, Lines, and Planes (303)
- Web Resources:** Points, Lines & Planes: Internet Sites (733)

► **GEOMETRY: Angles & Triangles**

InterActivity: Math InterActive Tools (1308)

InterActivity: Tools for Angles & Triangles (14)

Exploring Transformations | Graphing Dilations | Graphing Reflections | Graphing Rotations
Graphing Translations | Triangles: Interior & Exterior Angles

Web Inquiry: What are the different types of angles and some special angle pairs? (105)

Audio Inquiry: Pythagorean Theorem (1351)

Classroom Activity: Paper Folding Triangles and Euler's Line (1036)

Web Lesson: Classical Angle Constructions (512)

Project: How Many Ways Can the Pythagorean Theorem Be Proven? (304)

Web Resources: Angles & Triangles: Internet Sites (734)

► **GEOMETRY: Parallel Lines**

InterActivity: Math InterActive Tools (1308)

InterActivity: Tools for Parallel Lines (15)

Parallel Lines: Special Angles

Web Inquiry: Why do artists use parallel lines that *do* intersect? (106)

Audio Inquiry: Parallel and Perpendicular Slopes (1357)

Classroom Activity: Greek Division (1037)

Web Lesson: More Than One Parallel Line? (513)

Project: Building a Riemannian World (305)

Web Resources: Parallel Lines: Internet Sites (735)

► **GEOMETRY: Triangle Congruency**

InterActivity: Math InterActive Tools (1308)

InterActivity: Tools for Triangle Congruency (889)

Exploring Transformations | Graphing Reflections | Graphing Rotations
Graphing Translations | Triangles: Proving Congruency

Web Inquiry: How are congruent triangles used to prove some of the properties of special quadrilaterals? (107)

Audio Inquiry: CPCTC (1358)

Classroom Activity: Triangle Conjectures (1038)

Web Lesson: Congruency in Transformations (514)

Project: Congruency and Similarity in Quilt Design (306)

Web Resources: Triangle Congruency: Internet Sites (736)

► **GEOMETRY: Similarity**

InterActivity: Math InterActive Tools (1308)

InterActivity: Tools for Similarity (890)

Exploring Transformations | Graphing Dilations | Triangles: Proving Similarity

Web Inquiry: How are the perimeters and areas of similar polygons related? (108)

Audio Inquiry: Similarity and Proportions (1359)

Classroom Activity: Relationships in Proportion (1039)

Web Lesson: Similarity and Problem-Solving (515)

Project: Indirect Measure (307)

Web Resources: Similarity: Internet Sites (737)

► **GEOMETRY: Properties of Circles**

InterActivity: Math InterActive Tools (1308)

InterActivity: Tools for Properties of Circles (18)
Circles: Chords, Secants & Tangents

Web Inquiry: Which is a better buy – a slice from a 17-inch pizza cut into 10 pieces or one from a 14-inch pizza cut into 8 pieces? (109)

Audio Inquiry: Area and Circumference of a Circle (1349)

Classroom Activity: In Search of Pi (1040)

Web Lesson: Central and Inscribed Angles in Circles (516)

Project: Going Around in Circles (308)

Web Resources: Properties of Circles: Internet Sites (738)

► **GEOMETRY: 2D Figures**

InterActivity: Math InterActive Tools (1308)

InterActivity: Tools for 2D Figures (19)
Exploring Transformations | Graphing Dilations | Graphing Reflections | Graphing Rotations
Graphing Translations | Polygons: Interior & Exterior Angles

Web Inquiry: What do slides, flips, and turns have in common? (110)

Audio Inquiry: Area of Triangles and Quadrilaterals (1350)

Classroom Activity: Garden Fences (1041)

Web Lesson: House Plans (517)

Project: “Pick” a Formula (309)

Web Resources: 2D Figures: Internet Sites (739)

► **GEOMETRY: 3D Figures**

InterActivity: Math InterActive Tools (1308)

InterActivity: Tools for 3D Figures (20)
Volume: Prisms & Cylinders

Web Inquiry: Why are 2D features important when studying 3D solids? (111)

Audio Inquiry: Surface Area of Prisms and Cylinders (1353)

Classroom Activity: All Nets Are Not Created Equal (1042)

Web Lesson: Surface Area as an Art Form (518)

Project: Surface Area and Volume Relationships (310)

Web Resources: 3D Figures: Internet Sites (740)

► **TRIGONOMETRY: Ratios & Functions**

Web Inquiry: In a right triangle, how are the sides and angles related? (112)

Classroom Activity: Height of a Tree (1043)

Web Lesson: How Much Daylight in an Average Day? (519)

Project: Your Town’s Average Temperature and a Sine Curve (311)

Web Resources: Ratios & Functions: Internet Sites (741)

▶ **TRIGONOMETRY: Circular Functions & Graphs**

- Web Inquiry:** How are sine and cosine graphs transformed by changes to their equations? (113)
Classroom Activity: Circular vs. Hyperbolic Trig Functions (1044)
Web Lesson: Why Are Sine and Cosine Called Circular Functions? (520)
Project: Biorhythms and Sine Curves (312)
Web Resources: Circular Functions & Graphs: Internet Sites (742)

▶ **TRIGONOMETRY: Inverse Functions**

- Web Inquiry:** When and why are restrictions placed on the sine, cosine, and tangent functions? (114)
Classroom Activity: When Should Vegetables Be Planted in the Garden? (1045)
Web Lesson: Restriction of Domains (521)
Project: Approximating π with Inverse Trigonometric Functions (313)
Web Resources: Inverse Functions: Internet Sites (743)

▶ **TRIGONOMETRY: Identities & Equations**

- Web Inquiry:** What are trigonometric identities, how can they be verified, and how are they proved? (115)
Classroom Activity: Using a Trig Equation with the Nautical Mile (1046)
Web Lesson: Hyperbolic Analogies of Common Trigonometric Identities (522)
Project: Approximating Sine and Cosine (314)
Web Resources: Identities & Equations: Internet Sites (744)

▶ **TRIGONOMETRY: Triangles: Right & Oblique**

- Web Inquiry:** When solving non-right triangles, is there always one right answer? (116)
Classroom Activity: Finding a More General Area Formula (1047)
Web Lesson: Lighthouses (523)
Project: How Wide Is a Football Field? (315)
Web Resources: Triangles: Right & Oblique: Internet Sites (745)

▶ **TRIGONOMETRY: Complex Numbers**

- Web Inquiry:** How is De Moivre's Theorem used to find powers of complex numbers? (117)
Classroom Activity: Complex Roots of Quadratic Equations (1048)
Web Lesson: Orbits and Julia Sets (524)
Project: Appli-COMPLEX-cations (316)
Web Resources: Complex Numbers: Internet Sites (746)

▶ **TRIGONOMETRY: Polar Coordinates**

- Web Inquiry:** What are polar coordinates and how are they related to rectangular coordinates? (118)
Classroom Activity: A Polar Family Treasure (1049)
Web Lesson: Classical Curves: Polar and Rectangular Graphs (525)
Project: Create Your Own Polar Curve (317)
Web Resources: Polar Coordinates: Internet Sites (747)

▶ **DATA ANALYSIS: Data Collection Methods**

- Web Inquiry:** How are sampling techniques during collection of data important to the analysis and interpretation of the results? (119)
- Classroom Activity:** Statistics in the News: What to Believe? (1050)
- Web Lesson:** What's My Data Type? (526)
- Project:** Random Samples Using Surveys (318)
- Web Resources:** Data Collection Methods: Internet Sites (748)

▶ **DATA ANALYSIS: Scatter Diagrams & Correlation**

- Web Inquiry:** Why should the measure of a linear relationship be analyzed beyond the correlation coefficient? (120)
- Classroom Activity:** Sentences, Words, and Reading Level (1051)
- Web Lesson:** Matching Correlation and Plot (527)
- Project:** Data Gathering with Independent and Dependent Variables (319)
- Web Resources:** Scatter Diagrams & Correlation: Internet Sites (749)

▶ **DATA ANALYSIS: Data Representations**

- Web Inquiry:** Why is the five-number summary important in the analysis of box-and-whisker plots? (121)
- Classroom Activity:** Using Data to Make Good Decisions (1052)
- Web Lesson:** Line Graphs with Real-World Data (528)
- Project:** Analyzing and Presenting a Month's Collection of Data (320)
- Web Resources:** Data Representations: Internet Sites (750)

▶ **DATA ANALYSIS: Measures of Center**

- Web Inquiry:** What are the pros and cons of the three measures of central tendency? (122)
- Classroom Activity:** Mean and Median: Are They Stable? (1053)
- Web Lesson:** Central Tendencies from Web Data (529)
- Project:** Using Your Own Data (321)
- Web Resources:** Measures of Center: Internet Sites (751)

▶ **DATA ANALYSIS: Measures of Variability**

- Web Inquiry:** How can two data sets have the same mean but different standard deviations? (123)
- Classroom Activity:** Choosing the "Best" Statistic (1054)
- Web Lesson:** Changing Data: Effects on Variability (530)
- Project:** Variability of World Leaders (322)
- Web Resources:** Measures of Variability: Internet Sites (752)

▶ **DATA ANALYSIS: Probability**

- Web Inquiry:** What is a probability distribution and when is it appropriate to use it to make predictions? (124)
- Classroom Activity:** Probability Distribution of Throwing Two Dice (1055)
- Web Lesson:** Counts vs. Percentages (531)
- Project:** Animal Crackers (323)
- Web Resources:** Probability: Internet Sites (753)