Mathematics
229 videos

	Year	Rating	Duration

60°, 30°, 90°, 45° Angles
Series: Constructing Angles
2013 · E · 00:04:26

This programme shows students how to construct 60° and 90° angles using a compass and ruler and then how derive 30° and 45° angles by bisecting each of them respectively.

Accuracy: Continuous Data
Series: Numbers
2013 · E · 00:06:13

In this video, the teacher demonstrates how to identify the maximum and minimum possible values of a number that has been rounded, and how to identify upper and lower bounds for continuous data.

Accuracy: Discrete Data
Series: Numbers
2013 · E · 00:04:25

In this video, the teacher demonstrates how to identify the maximum and minimum possible values of a number that has been rounded, and how to identify upper and lower bounds for discrete data.

Adding a Constant
Series: Transformation of Graphs
2013 · E · 00:06:09

This video shows students what adding a constant does to a graph. It shows the result of adding a positive or negative constant inside or outside the brackets of a parabola or cubic graph.

Algebra: A Piece of Cake - An Introduction to Algebra
2001 · E · 00:31:02

The programme covers the concept of a pronumeral, numerical substitution, algebraic conventions, developing algebraic rules from number patterns and simplifying expressions.What better place to begin...

Algebra: The Basics
2011 · E · 00:20:36

This program explains the basic concepts of algebra including number patterns, pronumerals, algebraic expressions, order of operations and expanding and simplifying. The natural and city landscapes of...

Algebra: Volume 1
Series: Bill Nye's Solving for X
2009 · E · 00:17:32

Concepts addressed in Solving for X: Algebra I, Volume 1: Variables - She called herself Y. Teary-eyed, one evening she appeared unannounced at his office, asking Detective Nye to uncover the true ide...

Algebraic Notation: Maths as a Foreign Language
Series: Mathemania Series 4
2007 · E · 00:26:44

Another winner in the Mathemania brand, this is a clear and concise explanation of algebraic notation. In this programme, we start with an introduction to algebraic notation then examine algebraic def...

Algebraic Variables and Index Laws
2014 · E · 00:04:04

This clip defines the mathematical concepts of constants and variables before going on to apply index laws to variables using positive integer indices and the zero index. Simplifying equations by addi...

Allied or Co-Interior Angles
Series: Angles in Parallel Lines
2013 · E · 00:02:21

This video explains how allied or co-interior angles on parallel lines add up to 180 degrees. To identify them, students must identify a C shape on parallel lines and in finding that, they are able to...

Alternate Angle Theorem Series: Circle Theorems This programme showcases the trickiest circle theorem, the alternate angle theorem. The teacher uses the analogy of a sail boat to simplify the process.	2013	E	00:03:13
Alternate Angles Series: Angles in Parallel Lines This video demonstrates how to identify alternate angles by identifying a Z on parallel lines. In doing this, students are able to calculate the degrees of alternate angles.	2013	E	00:02:56
An Introduction to Integration Series: Integration This video gives an introduction about the process of integration, which is the inverse process of differentiation. It shows how to obtain the equation of a curve though the equation of its gradient.	2013	E	00:07:57
Analysing Inequalities Series: Algebra for Students We hear inequality phrases like "more than," "less than" and "in between" all the time. Join our hosts in the world of algebra as they explore what these expressions mean and what it means to analyse...	2007	E	00:23:57
Angle at the Centre Is Twice the Angle at the Circumference Series: Circle Theorems This video demonstrates to students that the angle at the centre of a circle is twice the size of an angle at the circumference.	2013	E	00:03:32
Angle between a Radius and Tangent Is 90 Degrees Series: Circle Theorems In this video, the teacher demonstrates another circle theorem in which the angle between the radius and tangent equals 90 degrees through the use of triangles and algebra.	2013	E	00:04:06
Angle Bisector Series: Constructing Angles This programme shows one of the keys skills needed in geometrical construction. It teaches students how to bisect acute and reflex angles using a compass and ruler.	2013	E	00:02:54
Angles in a Polygon Series: Angles in Polygons The angles of a triangle add up to equal 180 degrees. In this video, students are taught how to find the angles in a polygon by splitting the polygon into triangles. This creates the formula for findi...	2013	E	00:04:38
Angles in a Semicircle Equal 90 Degrees Series: Circle Theorems This programme introduces students to another circle theorem; that angles in a semicircle equal 90 degrees. These angles are made by placing a triangle in the semi-circle.	2013	E	00:03:12
Angles in a Triangle Series: Angles in Polygons This video introduces the three types of triangles; scalene, isosceles and equilateral. Students learn the properties unique to each of these triangles and how to identify them.	2013	E	00:07:52
Angles in the Same Segment Are Equal Series: Circle Theorems Continuing on from "Angle at the Centre Is Twice the Angle at the Circumference", this programme shows students how angles in the same segment are equal by identifying "butterflies" within circles.	2013	E	00:04:30

Applying the Differentiation of Trigonometric Functions Series: Differentiation This video shows how to use the rules of differentiating trigonometric functions to solve different problems.	2013	E	00:06:05
Arc Length Series: Circumference and Area of a Circle This programme shows students how to calculate the arc length of a circle by using the circumference, radius, and .	2013	E	00:05:55
Arc Length and Sectors Series: Circumference and Area of a Circle In this programme, students are taught to remember and use the formula for the length of an arc. Students also learn the formula for the area of a sector in a circle.	2013	E	00:04:06
Area of Sectors Series: Circumference and Area of a Circle In this video, students learn how to calculate the area of a sector of a circle using the angle provided, radius, and .	2013	E	00:04:27
Area of Sectors (Advanced) Series: Circumference and Area of a Circle This video continues on from "Area of Sectors" providing a more advanced question where students are to find the area of a sector in a circle that is missing a segment.	2013	E	00:06:32
Area of Segments Series: Circumference and Area of a Circle A segment of a circle is found by drawing in a chord and then slicing off the smaller part of the circle. This programme shows students how to find the area of a segment of a circle.	2013	E	00:04:26
Basic Geometrical Ideas This programme covers some of the core concepts of geometry. Students will learn about the features of parallel and intersecting lines, circles, triangles, and quadrilaterals.	2015	E	00:23:46
Basic Index Laws: Games, Set, Match Series: Numbers and Algebra This video demonstrates how to use index notation to establish index laws with positive integral indices and the zero index. Using the example of Grand Slam tennis tournaments, our narrator constructs...	2014	E	00:05:06
Basketballs, Parabolas and Circles Series: Numbers and Algebra There's a lot of geometry on a basketball court! This video explores the connection between algebraic and graphical representations of relations such as simple quadratics, circles and exponentials thr...	2014	E	00:06:02
Bearings: Scale Diagrams Series: Geometry Following on from 'Bearings: The Rules', this video applies the knowledge students have learnt about bearings to scale diagrams using practical questions.	2013	E	00:05:33
Bearings: The Rules Series: Geometry This programme introduces students to bearings and the rules involved in their use. The topic is explained using an obtuse angle, angles on parallel lines, and a triangle.	2013	E	00:06:10
Best Buys: Buying or Making Sandwiches Series: Numbers and Algebra A group of friends are planning a lunch and compare the costs of pre-made lunches versus making it themselves. They investigate their options by comparing total costs and per person costs. Calculation...	2014	E	00:04:03

BIDMAS Series: Numbers Students learn to understand the concept of the order of precedence in mathematical operations through the acronym BIDMAS; brackets, index, divide, multiply, add and subtract.	2013	E	00:03:42
Bivariate Data and Pool Use This clip investigates how the number of people at the local pool changes over the course of a day. The data is displayed in graphs showing pool patron numbers during each 2 hour time period. Follow a...	2015	E	00:06:57
Boxplots Series: Representing Data Boxplots or box and whisker diagrams are another way of representing data. This video demonstrates how to read and draw a boxplot by using the maximum and minimum values, the median and then the upper...	2013	E	00:06:57
Calculating Bearings Series: Geometry In this programme, students learn how to use bearings to describe a direction and how to solve problems involving bearings.	2013	E	00:06:36
Calculating Duration across Time Zones Calculating flight distances within and across time zones is a common need. This clip investigates the arrival and departure times of someone travelling within and across times zones in Australia and...	2014	E	00:05:24
Calculating Profit: Earning Your Bread and Butter Series: Numbers and Algebra Our presenter is interested in running her own café and decides to see what profit can be made from selling sandwiches. She works through the individual costs of sandwich ingredients to compare agains...	2014	E	00:04:28
Comparing Fractions Series: Numbers The presenter compares fractions in order to explore the concept of fractions, in particular how to identify and numerically order fractions by converting to the same denominator.	2013	E	00:02:59
Completing the Square Series: Solving Quadratic Equations The teacher demonstrates to students how to use the method known as "completing the square" to solve quadratic equations.	2013	E	00:04:56
Compound Area Series: Geometry Through this programme, students learn how to find the area and perimeter of more complex shapes made from rectangles and triangles. The two examples presented ask students to find the area of a compo...	2013	E	00:04:22
Compound Measure: Distance, Speed, and Time Series: Numbers A compound measure is a measurement that includes more than one measurement. This video looks at distance, speed, and time and how speed equals distance over time.	2013	E	00:07:35
Congruence and Similarity in Plane Shapes Our 'tradie' narrator is busy constructing a playground. Follow along as she goes beyond practical demonstrations to mathematically prove that she is creating sunshade shapes that are congruent or sim...	2014	E	00:04:39

Congruent Shapes and Transformations		2014	E	00:04:51
Our narrator is planning the layout of a new playground; she needs to recognise properties that determine congruence and which transformations create congruent figures. Follow along as she determines...				
Conversions of Length, Area and Volume Units Series: Geometry		2013	E	00:04:30
In this video, students learn how to convert between the metric units for area and volume using a rectangle as an example.				
Converting Hours and Minutes into Decimals and Vice Versa Series: Numbers		2013	E	00:04:56
This video shows students how to convert time into decimals with the use of fractions. This method does not use calculators.				
Converting Hours and Minutes into Decimals Using a Calculator Series: Numbers		2013	E	00:02:53
With instructions on how to use a calculator, the teacher instructs students on how to convert hours and minutes into decimals using fractions.				
Coordinate Geometry Series: Mathemania Series 3		2006	E	00:30:18
This programme starts as a student uses a street directory to find a suburban park where she meets a friend to do maths homework. Using a grid reference, the park is located and ideas are expanded to...				
Corresponding Angles Series: Angles in Parallel Lines		2013	E	00:03:36
This programme informs students of one of the three parallel line angles, corresponding angles. Students learn how to identify it and in doing so, how to calculate an angle using other angles.				
Cyclic Quadrilateral Series: Circle Theorems		2013	E	00:03:47
This programme introduces students to the concept of cyclic quadrilaterals, which are quadrilateral whose vertices all lie on a single circle. In this video, the focus is specifically on how the oppos...				
Decimals: The Accuracy of Numbers Series: Mathemania Series 4		2007	E	00:30:55
Decimal numbers come into our lives just about every day. This programme explores the world of decimal numbers where we share a day in the life of the presenter who entertains us in her own quirky way...				
Definite Integrals Series: Integration		2013	E	00:09:47
This video explains definite integrals, which use limits on the integral signs to come up with a final numerical answer after integrating.				
Definitions for Circle Thereoms Series: Circle Theorems		2013	E	00:02:01
In this video, the teacher introduces and explains to students the basic definitions in circle theorems. These includes circumference, diameter, radius, tangent, and chord.				
Destination Distances on a Cartesian Plane Series: Numbers and Algebra		2014	E	00:06:31
When the Smithton River floods five local towns, a plane needs to drop supplies at each. A route needs to be determined that will reach the most affected areas first, while ensuring the plane has enou...				

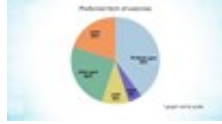|				
Differential Equations Series: Integration This video demonstrates how to use integration to remove dy/dx from equations to obtain an equation that is free from any derivatives.	2013	E	00:08:10
Differentiating Exponentials and Logarithms Series: Differentiation This video shows the special rules used to find the derivatives of exponential and logarithmic functions.	2013	E	00:04:29
Differentiating Implicit Functions Series: Differentiation This video shows how to differentiate implicit functions, where the function is not written in the form of y = f(x).	2013	E	00:09:29
Differentiating Parametric Equations Series: Differentiation This video explains how to obtain the derivative of a parametic equation dy/dx, when both the x and y variables depend on a third independent variable, t.	2013	E	00:04:40
Differentiating Trigonometric Functions Series: Differentiation This video shows how to evaluate the derivatives of trigonometric functions, including sin (x), cos (x) and tan (x).	2013	E	00:06:55
Differentiating with Negative and Fractional Indices Series: Differentiation This video shows how to evaluate the derivatives of functions raised to negative or fractional powers, using the power rule.	2013	E	00:06:24
Distance between Two Points Series: Coordinates This video shows students how to find the distance between two points or coordinates by creating a triangle and applying Pythagoras' theorem.	2013	E	00:07:40
Divisibility Tests: 2–6 Series: Numbers In this clip, students learn how to apply simple tests of divisibility for the numbers 2–6.	2013	E	00:03:00
Divisibility Tests: 7–10 Series: Numbers In this clip, students learn how to apply simple tests of divisibility for the numbers 7–10.	2013	E	00:03:02
Drawing Prisms This clip explores prisms and uses computer graphics to show the aerial, front and side views of many different prisms. Throughout the clip, students are prompted to make their own drawings of differe...	2015	E	00:04:16
Drawing: Cover-Up Method Series: Graphs In this video, one method for drawing straight line graphs is shown. By forcing x or y to be 0, that value is "covered up" and the equation can be solved, and both the x-intercepts and y-intercepts ca...	2013	E	00:05:38
Drawing: Gradient-Intercept Method Series: Graphs In this video, students learn how to plot a straight line graph by identifying the gradient, and using it with the y-intercept.	2013	E	00:04:21

Drawing: Table Method Series: Graphs In this programme, the teacher demonstrates how the table method is used in order to teach students how to plot straight lines onto a graph.	2013	E	00:10:48
Evaluating Statistical Claims This clip investigates statistical data and data displays used in the advertising of a new gym. Follow along to find the inconsistencies in the statistics, graphs and pie charts, and discover more abo...	2015	E	00:05:23
Exploring Fractions Join us on a fruit-slashing foray into the world of fractions. In this action-packed program, we slice and dice fruit into various fractions; adding, subtracting and further dividing plump fruit piece...	2011	E	00:18:41
Exponential Functions Series: Algebra for Students Exponential phenomena are at work all around us-from population growth to how long it takes for a bouncing ball to come to rest. This carefully paced program will not only introduce students to the ru...	2007	E	00:22:12
Exponents and Index Laws Exponents and index laws can make manipulations of numbers simpler. In this clip, two situations are used to apply index laws to numerical expressions with integer indices. In the first situation, the...	2014	E	00:06:27
Exponents: We Are the Power Series: Mathemania Series 4 This entertaining and informative programme explains all about exponents, the powers to which numbers are raised. Examining positive and negative indices, the uses and benefits of using exponents to e...	2007	E	00:34:11
External and Internal Angles in a Regular Polygon Series: Angles in Polygons In this programme, students are taught how to find the external and internal angles of a regular polygon, using a standard formula.	2013	E	00:06:05
Factor Trees and the Ladder Method Series: Numbers In this video students learn to express a number as a product of it's prime factors, using two methods; factor trees and the ladder method.	2013	E	00:05:48
Factorisation Series: Solving Quadratic Equations This video shows one of the methods used to solve a quadratic equation. Factorisation is one of the quickest and most popular methods used, and students are shown how to use it.	2013	E	00:08:29
Fantastic Factorising: An Introduction to Factorising in Algebra Our young presenter explores a variety of ways to represent and explain the techniques used in numerical and algebraic factorising.	2001	E	00:32:59
Finding the Area of Composite Shapes Our narrator is helping to build a new playground. Her boss needs her to determine the area of different zones of the playground, some of which are composite shapes. Follow along as she works through...	2014	E	00:04:36
Finding the Equation Series: Graphs This video shows students how to find the equation of a straight line by using the formula y=mx+c.	2013	E	00:04:46

Finding the Gradient and Intercept of y = mx + c
Series: Algebra

2013   E   00:04:02

In this programme, students learn to how to rearrange the equations into the standard y = mx + c formula, in order to easily identify the gradient and y-intercept of a straight line.

Formulating Differential Equations
Series: Integration

2013   E   00:09:39

This video shows how to formulate differential equations from a series of statements and integrate these equations in order to obtain the answer asked for in the question.

Fractions: Adding and Subtracting
Series: Numbers

2013   E   00:04:33

Students learn the basics of how to add and subtract fractions in this video. This includes fractions with a common denominator, how to add and subtract fractions by writing them with a common denomin...

Fractions: Adding and Subtracting Mixed Fractions
Series: Numbers

2013   E   00:02:47

Continuing from "Fractions: Adding and Subtracting", this video furthers students knowledge of adding and subtracting fractions by using mixed numbers. The method used by the teacher uses improper fra...

Fractions: Adding and Subtracting Mixed Fractions (Alternative Method)
Series: Numbers

2013   E   00:03:32

Continuing on from "Fractions: Adding and Subtracting" and "Fractions: Adding and Subtracting Mixed Fractions" this video shows students how to add and subtract mixed fractions using a faster, more ad...

Fractions: Cancelling Down
Series: Numbers

2013   E   00:03:00

Cancelling down is the process of simplifying fractions. In this video, the teacher explains how to do this through a process of division.

Fractions: Dividing
Series: Numbers

2013   E   00:03:25

In this clip, students are taught to interpret division as the inverse of multiplication, and divide integers and fractions by a fraction.

Fractions: Introduction and Equivalent
Series: Numbers

2013   E   00:05:34

Students are introduced to the concept of fractions in this video. They learn to recognise when two fractions are equivalent and how to identify, recognise, find, and calculate equivalent fractions.

Fractions: Mixed to Improper and Improper to Mixed
Series: Numbers

2013   E   00:04:10

In this clip, students are taught how to change a mixed number to an improper fraction and vice versa, using example questions.

Fractions: Multiplying
Series: Numbers

2013   E   00:03:37

In this clip, students learn how to multiply fractions by integers and other fractions.

Fractions: Multiplying and Dividing Mixed Fractions
Series: Numbers

2013   E   00:03:02

Continuing on from "Fractions: Multiplying" and "Fractions: Dividing", this video demonstrates how students can solve multiplication and division fraction equations that involve mixed numbers.

Functions and Relations
Series: Algebra for Students

Functions and relations are important aspects of algebra. By showing how two sets of numbers are related, you can represent all types of real-world phenomena -- from Ferris wheels and roller coasters...

2007	E	00:22:21

Geometric Constructions

This programme demonstrates elementary construction techniques involving plane shapes using a ruler, pencil, compass and protractor. It is essential viewing for any junior class about to embark upon a...

2006	E	00:20:43

Geometric Transformations

This programme introduces the four common geometric transformations in interesting settings and in a way that is relevant to students. Translation, reflection, rotation and dilation are investigated a...

2007	E	00:23:25

Geometry 2: Surface Area of Solids

This programme shows how to measure the dimensions of common 3D objects. The calculations needed to obtain their surface areas and volumes are also illustrated.

2005	E	00:36:02

Graphing Distance and Time: A Runner's Story
Series: Numbers and Algebra

This video follows a runner graphing his running distance and speed. He explains what happened along the route that affected his speed, translating this information onto a graph and accounting for the...

2014	E	00:04:24

Graphing Simple Parabolas and Circles
Series: Numbers and Algebra

This video begins with a short introduction of everyday applications of circles and parabolas. Next, basic parabolas and circles are graphed using quadratic equations. Ideal for reinforcing concepts.

2014	E	00:04:10

HCF and LCM
Series: Numbers

In this video, the teacher demonstrates how to find the lowest common mulitple (LCM) and highest common factor (HCF) of two numbers.

2013	E	00:02:33

HCF and LCM using Prime Factors
Series: Numbers

This clip demonstrates how to find the highest common factor (HCF) and lowest common multiple (LCM) of large numbers using prime factors.

2013	E	00:03:49

Histograms and Boxplots of Gym Membership

In this clip, histograms and boxplots are used to display the results of a study into the number of hours gym members use the gym each week. This clip introduces important terms and concepts including...

2015	E	00:06:13

Histograms and Frequency Polygons
Series: Representing Data

This video presents how to draw a histograms using continuous data and using that how to draw a frequency polygon.

2013	E	00:03:23

Histograms of Unequal Class Widths
Series: Representing Data

Histograms with unequal class widths differ from histograms with equal class widths in that the area rather than the height of each bar is used to display frequency. In this programme, students are ta...

2013	E	00:05:40

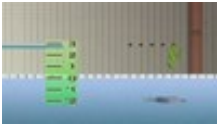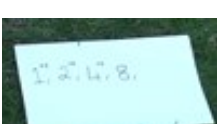|				
Identifying Polygons Series: Angles in Polygons In this video, students are introduced to polygons and what shapes are polygons. These includes three different types of triangles, and six types of quadrilaterals, as well as other shapes.	2013	E	00:06:39
Increasing and Decreasing Functions Series: Differentiation This video describes increasing functions, graphs with a positive gradient, and decreasing functions, graphs with a negative gradient. It shows how to evaluate and find the range of values in which a...	2013	E	00:07:48
Index Notation and Prime Factors Series: Numbers and Algebra This video provides a short lesson on index notation and representing whole numbers as products of powers of prime numbers. Examples of raising base numbers to different powers are shown. Prime and co...	2014	E	00:06:46
Integers: The Whole Thing Integers are all around us and used for many different purposes. This programme explores the world of integers where we share a day in the life of the presenter who entertains us in her own quirky way...	2007	E	00:27:07
Integrating 1/x and e^x Series: Integration This video shows how to obtain the integrals for 1/x and e^x functions.	2013	E	00:05:54
Integrating Basic Trigonometric Functions Series: Integration This video shows how to obtain the integrals for basic trigonometric functions.	2013	E	00:06:43
Integrating Functions of (ax + b) Series: Integration This video demonstrates how to integrate (ax + b) functions by using the reverse of the chain rule.	2013	E	00:05:26
Integrating sin^2 (x), cos^2 (x) and tan^2 (x) Series: Integration This video shows how to obtain the integrals for sin squared, cos squared and tan squared.	2013	E	00:06:45
Integration by Parts Series: Integration This video shows how to integrate by parts when the function involves a product of two functions that cannot be integrated through substitution.	2013	E	00:12:03
Integration by Substitution Series: Integration This video shows how to obtain the integrals for complicated functions by first making a substitution.	2013	E	00:09:11
Integration by Substitution: Non-Linear Subsitution Series: Integration This video shows how to obtain the integrals for complicated functions with a non-linear substitution.	2013	E	00:06:52
Integration Using Partial Fractions Series: Integration This video shows how to obtain the integrals for functions involving polynomials in the denominator by using partial fractions.	2013	E	00:09:32

Interest, Loans and Credit

You want to buy a new bike, but you've only got half the money you need. You might consider a high-interest savings account. But how long would it take to save? And how much would you pay in bank fees...

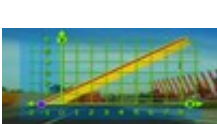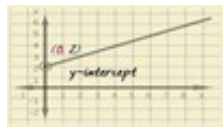|		
2011	E	00:17:46

Into the Negative Zone!: Working with Integers
Series: Mathemania Series 1

Our young presenter ventures fearlessly into the negative zone to learn how to add, subtract, multiply and divide positive and negative numbers.

2001	E	00:27:08

Introducing Probability
Series: Mathemania Series 2

This program demonstrates experimental and theoretical probability. Looking particularly at: probability with, and without replacement; probabilities and their complements; representing events and pro...

2003	E	00:23:47

Introducing Problem Solving
Series: Mathemania Series 2

This program is an excellent introduction to problem solving suitable for Middle School students.

2004	E	00:35:57

Introducing Ratio and Proportion
Series: Mathemania Series 2

Using a range of real life scenarios, this programme provides an introduction to the fundamental concepts of ratio and comparison of quantities. These include: writing ratios, ratios and fractions, eq...

2003	E	00:20:31

Introducing Statistics
Series: Mathemania Series 2

For Junior Secondary students, this program covers statistics and simple statistical manipulation as applied in everyday life.

2003	E	00:24:01

Introducing Trigonometric Ratios

Trigonometric ratios have many practical uses in the building industry, engineering, astronomy and geography. This clip shows how to calculate sine, cosine and tangent for given angles in right-angled...

2015	E	00:05:43

Investigating Population Survey Data

In this clip, multiple surveys investigating the number of times Australians visit the beach each week are conducted and analysed. Follow along as the means and medians are calculated for each survey....

2015	E	00:05:15

Irrational Numbers: Pi and Pies

The clip explains how the irrational number Pi () is derived and provides an example of its practical application in calculating the area of different sized pie tins. It explores: how Pi is derived b...

2014	E	00:05:27

Let's Get It Straight: Linear Equations and Their Graphs
Series: Mathemania Series 1

This program covers a review of gradient; equation of a line through the origin; lines with positive and negative gradients; equation of a line with a positive or negative y-intercept; domain and rang...

2001	E	00:30:11

Line Graphs: Gradients and Midpoints
Series: Numbers and Algebra

This video follows a sprinter graphing her distance and speed for two separate sprints. The first sprint is at a constant speed, resulting in a straight line graph. In the second sprint, her graph ref...

2014	E	00:05:22

Linear Equations and Slope Series: Algebra for Students Linear relationships are all around us. Join our hosts as they tackle linear equations and slope - two topics in algebra that go hand-in-hand. Through a series of real-world scenarios, see how a table...	2007	E	00:24:19
Linear Functions: An Introduction This programme is an excellent introduction to linear functions. Students, with the aid of "Sharpy the Pencil", learn to plot and sketch graphs from linear equations as well as deriving linear equatio...	2009	E	00:21:12
Loci of One or Two Lines Series: Loci This programme shows students how to find the loci of one ongoing or terminating line or two lines and how to apply this knowledge into practical questions.	2013	E	00:07:29
Loci of One or Two Points Series: Loci The loci or locus is a line following a given rule. In this video, the teacher demonstrates how to find the loci of either one and two points.	2013	E	00:04:58
Mean of Frequency Data Series: Statistical Averages In this video, students learn how to calculate the mean of data that is in a frequency table by using multiplication.	2013	E	00:04:58
Mean of Grouped Frequency Data Series: Statistical Averages In this video, the teacher demonstrates how to estimate the mean for a set of grouped data by using a formula.	2013	E	00:03:25
Mean of Raw Data Series: Statistical Averages In this programme, students are taught how to calculate the mean of raw data. Students also learn that although it commonly referred to as 'the average', it is simply one of the most common.	2013	E	00:04:10
Mean, Median and Outliers This clip explores the effect of outliers on measures of central tendency - mean and median. The lengths of time that swimmers stay underwater is collected, and mean and median values are calculated....	2015	E	00:05:56
Median and Mode of Frequency Data Series: Statistical Averages In this programme, students learn how to find the median and mode of a data set that is presented in a frequency table.	2013	E	00:03:49
Median and Mode of Grouped Frequency Data Series: Statistical Averages In this video, students are taught how to estimate the median of grouped data by using a frequency table and plotting the data on a graph. Students also learn how to estimate the modal class through t...	2013	E	00:05:15
Median and Mode of Raw Data Series: Statistical Averages In this programme, students are taught what the median of data is and how to calculate it by organising raw data or through a formula. Students also learn about the mode of a data set, and how to find...	2013	E	00:04:41
Metric Units: Length, Mass and Capacity You can use metric units to measure anything from a grain of sand to the whole wide world! This fun program takes us from the beach to the kitchen to explain the metric units used to measure length,...	2011	E	00:14:53

Midpoint between Two Coordinates Series: Coordinates This video shows students how to find the midpoint between two coordinates for intervals, 2D and 3D shapes.	2013	E	00:03:56
Multiple Integration by Parts Series: Integration This video demonstrates how to do integration by parts more than one time so as to obtain a function that can be integrated more easily.	2013	E	00:09:36
Multiples Series: Numbers This video allows students to understand the term 'multiple' in context and teaches them how to use it.	2013	E	00:01:33
Multiplying by a Constant Series: Transformation of Graphs This video shows students what multiplying an equation with a constant does to a graph, whether it is inside or outside the function brackets.	2013	E	00:07:07
Naming and Measuring Angles Series: Mathemania Series 3 This program provides students with a lively introduction to key concepts involved with angles, such as how we define and write information about an angle, mathematical notation for rays, line segment...	2006	E	00:22:42
Negative: Reflections Series: Transformation of Graphs This video informs students of how a negative number can transform a graph depending on whether it is -f(x) or f(-x).	2013	E	00:03:03
Number Patterns: Finding the nth Term Series: Algebra In this video, students learn to use algebra to find and describe the nth term. The teacher then uses this to find the general term (nth term) of a linear sequence.	2013	E	00:04:20
Number Patterns: Position to Term Method Series: Algebra This programme aims to teach students how to describe the position-to-term rule, generate terms of a sequence, find a term of a sequence from its position, and how to find a term given its position an...	2013	E	00:04:56
Number Patterns: Square Numbers Series: Algebra This programme shows students how to recognise and apply square numbers using a visual demonstration.	2013	E	00:02:22
Number Patterns: Term by Term Method Series: Algebra This video aims to teach students how to use the term by term method to find the subsequent terms in a linear sequence.	2013	E	00:04:10
Operations with Algebraic Fractions This clip applies the four operations to simple algebraic fractions with numerical denominators. It begins by using the example of pizza to add and subtract fractions, and determine lowest common deno...	2014	E	00:04:31
Parallel and Perpendicular Lines This clip demonstrates how to solve problems involving parallel and perpendicular lines. Methods for finding the gradient (slope) and equations of parallel and perpendicular lines are applied to diffe...	2015	E	00:05:58

Parallel Lines Series: Graphs This video shows students how parallel lines on a graph have the same gradient, and how to identify which lines are parallel to each other using their equations.	2013	E	00:04:27
Part 1: Symmetry and Angles Series: Geometry of Groove This video explores the application of geometrical concepts and their critical role in the contemporary music industry. Modern instruments, powerful sound systems and complex recording technology all...	2002	E	00:14:04
Part 2: Triangles and Polygons Series: Geometry of Groove The application of geometrical concepts is critical in the contemporary music industry. Modern instruments, powerful sound systems and complex recording technology all rely on geometry for the success...	2002	E	00:12:47
Patterns and Formulas Series: Algebra for Students Patterns are used to make predictions every day. Formulas are extremely important in the world of algebra. From developing a formula that represents a real-world scenario to building a table of values...	2007	E	00:20:05
Perfect Squares and Square Roots Series: Numbers and Algebra This video investigates and uses square roots of perfect square numbers to create and solve equations. Viewers will learn how to determine the square roots of perfect squares, and determine if a numbe...	2014	E	00:04:10
Perpendicular Bisector of a Line Series: Constructing Angles This clip shows students how to create a perpendicular bisector of a line using a compass and a ruler.	2013	E	00:02:19
Perpendicular Lines Series: Graphs This programme shows students how to identify which lines are perpendicular through their gradients.	2013	E	00:06:12
Pictograms Series: Representing Data Pictograms are a way of representing data using drawings. Students are shown how to use a key to read a pictogram, and how to draw one based on a data set.	2013	E	00:04:03
Pie Charts: Drawing and Reading Series: Representing Data In this programme, students are taught how to interpret and construct pie charts by using angles as a proportion of a circle.	2013	E	00:09:18
Plane and Simple: Areas of Polygons and Circles This programme contains clear, simple derivations of area formulae for the common geometric shapes: rectangle, square, parallelogram, rhombus, trapezium, triangle and circle.	2004	E	00:26:55
Polynomials Series: Algebra for Students When you are diving into algebra, it is a good idea to know how to recognise and work with polynomials. Join our hosts as they introduce students to the vocabulary associated with polynomials and demo...	2007	E	00:24:08

Pre-Algebra: Volume 1 Series: Bill Nye's Solving for X Concepts addressed in Solving for X: Pre- Algebra I, Volume 1: Infinite Fractions - Is that Rachael Ray? Martha Stewart? Good Heavens, its Bill Nye, cooking up some fractions. Well start out in the k...	2009	E	00:19:44
Prime Factors Series: Numbers Students learn how to define prime factors and find them. Students will also learn how to express numbers in terms of their prime factors.	2013	E	00:01:44
Primes Series: Numbers In this clip, students are taught how to identify a prime number using the two factor rule.	2013	E	00:02:21
Probability Series: Maths Tutorials An on-screen probability tutorial with presenter Jacquie Hargreaves.	1990	E	00:32:19
Product of Primes, HCF, and LCM Series: Numbers This programme shows students how to find the product of prime numbers, as well as the HCF and LCM by using prime factors.	2013	E	00:05:54
Proving Congruent Triangles While building a barbeque shelter, our narrator's boss puts her geometry skills to the test by asking her to mathematically prove that five triangular roof trusses are congruent triangles. Follow alon...	2014	E	00:05:05
Pythagoras' Theorem in 3 Dimensions Series: Geometry This video shows students how to apply Pythagoras' theorem to find the length of internal diagonals in three dimensional shapes.	2013	E	00:04:34
Pythagoras' Theorem: An Introduction In this programme, we discover Pythagoras' Theorem and see how it is used to solve real world problems by finding unknown values in right angled triangles. And who better to introduce and demonstrate...	2009	E	00:20:41
Quadratic Formula Series: Solving Quadratic Equations This programme shows another method of solving quadratic equations through using the quadratic formula. Students are taught the quadratic formula and how to apply it to questions.	2013	E	00:08:25
Quadratic Functions Series: Algebra for Students Whether it's football, fireworks or finding the zeroes, it is important to know how to recognise quadratic functions by their parabolas and squared terms. Join our hosts on an in-depth exploration of...	2007	E	00:19:55
Quartiles and Interquartile Range: Frequency Data Series: Data Handling This programme furthers students knowledge of range and interquartile range by showing them how to apply it to frequency data, and how to find the interquartile range using a graph plotted from a freq...	2013	E	00:07:49
Quartiles and Interquartile Range: Raw Data Series: Data Handling This video introduces students to the concept of quartiles, what an interquartile range is, and how to find the median using it.	2013	E	00:04:51

Rates of Change Series: Differentiation The video shows how to approach questions relating to the rate of change using differentiation and evaluate such questions at a particular value.	2013	E	00:06:45

Rational Numbers: We Are Proportional
Series: Mathemania Series 4

2007   E   00:24:40

This entertaining programme provides students with an active introduction to the key concepts relating to rational numbers. Areas covered include defining rational numbers as the ratio of two integers...

Relative Frequency of Events

2015   E   00:04:42

This clip explores the probability of seeing Australian animals on a wildlife tour and uses relative frequency to describe the chances of seeing particular animals. Collected data is displayed in two-...
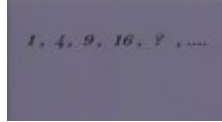
Reverse Percentages
Series: Numbers

2013   E   00:04:31

Students learn to use an inverse operation to solve percentage problems. This video presents the Unitary Method as a way of solving these problems.

Reverse Percentages (Alternative Method)
Series: Numbers

2013   E   00:02:15

In this video, students learn to use an alternative inverse operation to solve percentage problems.

Roots: The Radical Idea
Series: Mathemania Series 4

2007   E   00:28:50

In this entertaining program, we cover an introduction to roots and radicals; explore how roots can be simplified: carry out some operations with radicals; examine methods of approximation of roots; a...

Rotational Symmetry
Series: Geometry

2013   E   00:04:29

In this video, students are taught to recognise rotational symmetry, to find the order of rotational symmetry and to complete diagrams to a given order of rotational symmetry.

Rounding to the Nearest 10, 100 and 1000
Series: Numbers

2013   E   00:02:57

In this clip, students learn to round whole numbers to any given power of 10, so students learn how to round numbers to the nearest 10, 100 and 1000.

Scale Factor Enlargement: Negative Values
Series: Geometry

2013   E   00:07:40

This programme shows students how to enlarge or reduce the scale factor of a shape by a negative value and plot it on a graph.

Scale Factor Enlargement: Positive Values
Series: Geometry

2013   E   00:11:24

This programme shows students how to enlarge or reduce shapes in size and plot these shapes on graphs using coordinates.

Scatter Graphs
Series: Representing Data

2013   E   00:05:44

This programme demonstrates to students how to read and draw a scatter graph. It also explains what correlation is and how it is represented on the graph.
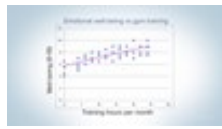
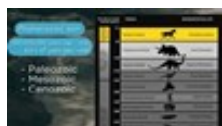|			
Scatter Plots and Gym Training In this clip, a series of scatterplots are used to show how regular gym attendance has an effect on variables such as resting heart rate, feelings of well-being and TV viewing habits. The data is coll...	2015	E	00:04:23
Series and Sequences Series: Maths Tutorials This maths tutorial explains series and sequences.	1990	E	00:46:19
Similarity, Ratio and Proportion Series: Mathemania Series 3 This programme presents the ideas of similarity, ratio and proportion in a refreshing and informal style. Examples are drawn from everyday life using familiar objects with on-screen graphics producing...	2006	E	00:22:30
Simple Random Sampling Series: Data Handling This video shows students the different methods of simple random sampling which include pulling the names out of the hat, using the Ran# button on a calculator, and a random number table.	2013	E	00:04:06
Simplifying Algebraic Products and Quotients Follow along as our narrator plays a video game that requires him to simplify algebraic products and quotients using index laws. It's a race against the clock as the questions become increasingly diff...	2014	E	00:04:13
Simultaneous Equations on the Golf Course Series: Numbers and Algebra This video demonstrates how to solve simultaneous equations, using the example of golfers determining par and handicaps. Substitution, elimination and graphing software methods are all used to solve e...	2014	E	00:04:40
Simultaneous Equations: Elimination Method - Different Coefficients Series: Algebra This programme teaches students how to solve simultaneous equations using the elimination method when there are no matching coefficients in the equations.	2013	E	00:04:04
Simultaneous Equations: Elimination Method - Matching Coefficients Series: Algebra Through this programme, students are introduced to simultaneous equations and they are shown how to solve them by adding or subtracting with coefficients already the same.	2013	E	00:06:34
Simultaneous Equations: Substitution Method Series: Algebra In this video, students are shown how to solve simultaneous equations using the substitution method.	2013	E	00:03:21
Small and Large Time Scales This clip demonstrates the usefulness of scientific notation (standard form) to express very large and small numbers. Examples worked through include evolutionary time periods, blinking, and the speed...	2014	E	00:04:50
Solving Equations with Fractions Series: Algebra Students learn how solve equations that involve fractions through a process using the LCM, division and multiplication. Students are also shown the cross multiplication method.	2013	E	00:05:26

| | **Solving Linear Equations** | 2011 | E | 00:23:42 |
| | Reviewing a variety methods for solving equations, including guess, check and improve, the balance method and backtracking, the program takes students through the process of finding a numerical soluti... | | | |

| | **Solving Quadratic Equations Graphically**
Series: Solving Quadratic Equations | 2013 | E | 00:05:18 |
| | This video shows students how to solve quadratic equations graphically as opposed to algebraically. | | | |

| | **Solving Quadratic Equations in Cricket and Rowing**
Series: Numbers and Algebra | 2014 | E | 00:05:02 |
| | Our presenter applies algebraic knowledge of quadratic equations to two sports events. First, he determines the height of a batted cricket ball and the amount of time it is in the air. Next, he determ... | | | |

| | **Spherical Geometry and Navigation** | 2001 | E | 00:20:21 |
| | We follow the crew of a 30,000 tonne container ship as they navigate their way around the globe. Along the way we discover key geometry and navigational concepts, such as: the Earth as a sphere, great... | | | |

| | **Squares, Cubes and Powers of Number**
Series: Numbers | 2013 | E | 00:04:25 |
| | This video teaches the basic concept of what a power is and the correct notation and wording used, through the use of square roots and cube roots. | | | |

| | **Standard Index Form: Calculations**
Series: Numbers | 2013 | E | 00:03:23 |
| | Continuing on from 'Standard Form: The Basics', this video uses standard form in calculations involving multiplication and division. | | | |

| | **Standard Index Form: The Basics**
Series: Numbers | 2013 | E | 00:04:52 |
| | Through this video, students come to understand standard form and its use of positive and negative indices. | | | |

| | **Statistics: Sampling, Surveying and Data Analysis** | 2011 | E | 00:18:44 |
| | In this dynamic program, our presenter wants to make a YouTube music video for her best friend's band, but they can't agree on which song to do! The solution: survey the target market - their friends... | | | |

| | **Stratified Sampling**
Series: Data Handling | 2013 | E | 00:03:47 |
| | This video explains to students what stratified sampling is, and demonstrates how to take a stratified sample of a population. | | | |

| | **Substituting Values in Formulae** | 2014 | E | 00:05:17 |
| | This clip demonstrates the importance of algebra and mathematical formulae in solving everyday problems. Working through a series of real-life examples, our narrator substitutes values into formulas t... | | | |

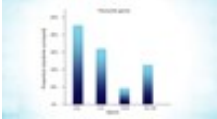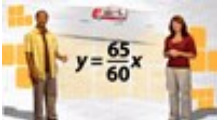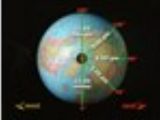| | **Surds: Rationalising**
Series: Numbers | 2013 | E | 00:06:04 |
| | Rationalising surds means to remove the root from the denominator of a fraction. This video shows students how to rationalise surds through a variety of questions. | | | |

| | **Surds: Rules and Simplifying**
Series: Numbers | 2013 | E | 00:05:49 |
| | In this programme, students are able to learn about how to simplify surds when multiplying, dividing, adding or subtracting them and the rules that accompany them. | | | |

Survey Data: Collecting and Displaying In this clip, the results of student surveys are collated into tables and means are calculated. Students are asked to rate a music genre from 1 to 5, and in a separate survey, are asked to identify th...	2015	E	00:04:41
Systems of Linear Equations Series: Algebra for Students Join our hosts as they tackle many real-life problems by using systems of linear equations! See how these systems can have zero, one or many common solutions. In the process of finding these solutions...	2007	E	00:23:43
Taking a Chance: Key Probability Concepts This programme is an odds-on favourite to make understanding probability a lot of fun! Set in the wonderful world of cards, coins and dice, this engaging programme introduces the basic concepts of pro...	2011	E	00:23:25
Tangent and Normal to a Curve Series: Differentiation This video shows how to obtain the equations of the tangent and normal to a curve using differentiation.	2013	E	00:09:15
That's a Bit Steep: All about Gradients Series: Mathemania Series 1 The program covers positive and negative gradients, 'Rise over Run' formula, revision of Cartesian coordinates, and the use of coordinates to calculate rise, run and hence gradient.	2001	E	00:23:47
The Area between a Curve and the x Axis Series: Integration This video shows how to obtain the area between a curve and the x axis using integration and definite integrals.	2013	E	00:08:09
The Area between a Curve and the y Axis Series: Integration This video shows how to obtain the area between a curve and the y axis using integration and definite integrals.	2013	E	00:03:09
The Area between a Line and a Curve Series: Integration This video shows how to obtain the area between a line and the curve using integration and definite integrals.	2013	E	00:06:42
The Area between Two Curves Series: Integration This video shows how to obtain the area between two curves using integration and definite integrals.	2013	E	00:04:51
The Chain Rule Series: Differentiation The video describes the chain rule, a rule used in differentiation to find the derivatives of 'composite functions'.	2013	E	00:06:15
The Exponential Function Series: Maths Tutorials This maths tutorial explains the exponential function.	1990	E	00:37:41
The Product Rule Series: Differentiation The video describes the product rule, a rule that is used to differentiate problems where one function is multiplied by another.	2013	E	00:09:06

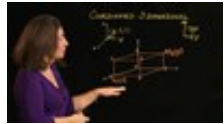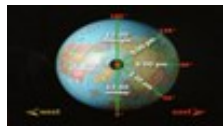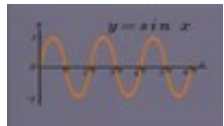|			
The Pythagorean Theorem and Right Triangles Series: Algebra for Students Pythagorean Theorem is a powerful tool which people have used for centuries - and at its heart is the right triangle. Join our hosts as they investigate the relationship between a right triangle's leg...	2007	E	00:20:56
The Quotient Rule Series: Differentiation The video describes the quotient rule, a rule that is used for differentiating problems where one function is divided by another.	2013	E	00:04:29
The Reciprocal Rule Series: Differentiation The video describes the reciprocal rule, a method in differentiation that can be used to find the derivative of a function that is the reciprocal of a differentiable function.	2013	E	00:03:14
Three Dimensional Series: Coordinates In this video, students learn about how to find three dimensional coordinates which involve coordinates in three planes.	2013	E	00:05:30
Time: Understanding and Calculating World Time This program examines how time zones work and how the difference in time between different regions is calculated.This program defines longitude and explains the mathematical relationship between longi...	2002	E	00:16:07
Triangles Series: Constructing Angles In this video, the teacher shows students how to construct a triangle when there is only a limited amount of information provided. She demonstrates three scenarios that students are likely to encounte...	2013	E	00:06:17
Triangles and Quadrilaterals Series: Mathemania Series 3 This programme illustrates the properties of triangles and quadrilaterals in a bright, informative and logical way. These shapes are found in architectural and constructional contexts. Their propertie...	2006	E	00:24:43
Trigonometric Functions Series: Maths Tutorials This maths tutorial explains the trigonometric function.	1990	E	00:29:09
Two Tangents from a Point to a Circle Are Equal Series: Circle Theorems Another circle theorem involves two tangents that come from the same point. Those two tangents are equal and symmetrical. The video demonstrates how this theorem can be used to solve problems.	2013	E	00:05:00
Understanding Ratio and Proportion This programme explores ratio and proportion with the aid of real world practical examples. From mixing paint to using basic ratio and proportion to estimate time, students will be engaged and enterta...	2009	E	00:16:20
Variables, Expressions, and Equations Series: Algebra for Students The "power" of algebra. What does that mean? Students will discover how algebra provides a way to organise patterns and represent real-life scenarios as well as abstract ones so that they can think ab...	2007	E	00:21:46

Volumes of Revolution
Series: Integration

2013   E   00:12:57

This video shows how to use integration to find the volume of a solid with a circular cross-section.

Volumes of Revolution
Series: Integration

This video shows how to use integration to find the volume of a solid with a circular cross-section.