



# MathIQ

Does your curve-fitting and statistics application not work the way you want it to? Build your own! Use MathIQ, a powerful curve-fitting and statistical software development package, to create applications that suit your needs.

MathIQ expands the scope of applications by offering an extensive selection of data analysis and calculation objects, including a superior range of fit and statistics models, as well as charts and graphs to visualize, interpret and present any experimental data. Raise the power of your applications – use MathIQ to integrate curve fitting and statistics into your applications.

## Key benefits

**A complete set of COM objects** allows programmers to integrate curve fitting and statistics into their applications or websites quickly and easily. Using COM technology, software developers can expand the abilities of new or existing software by integrating MathIQ into any application that supports COM-compliant programming languages, including .NET.

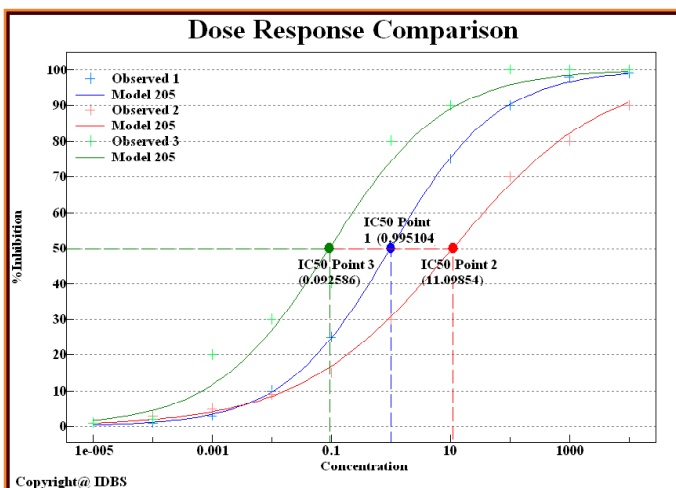
**Simplify results calculation** with the help of extensive example code. Use existing XLfit models or create your own using the Model Editor, which also allows you to give end users the ability to create new model files.

**Incorporate instant results visualization** into your applications, with versatile chart display and manipulation.

MathIQ gives you **a wide selection of predefined equations and accompanying descriptions** so that you can make the most suitable choice for your fitting needs. Build your own fit and statistics model libraries including model definitions, equations, parameters and associated comments.

## Curve-fitting intelligence

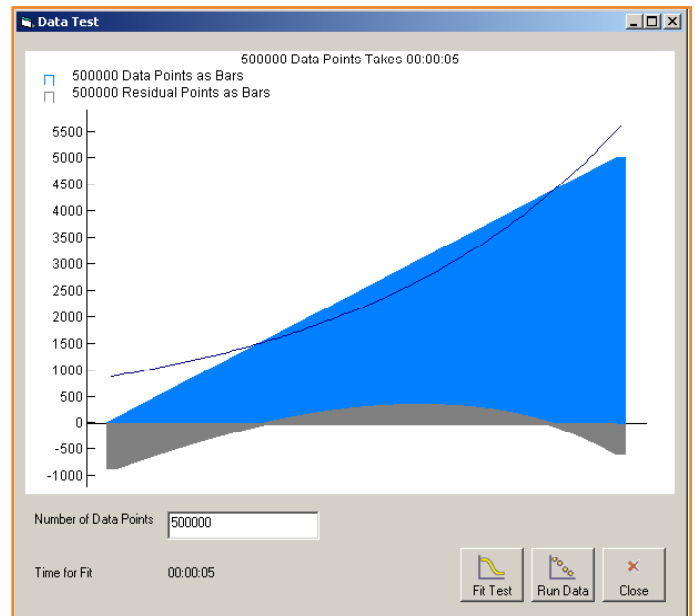
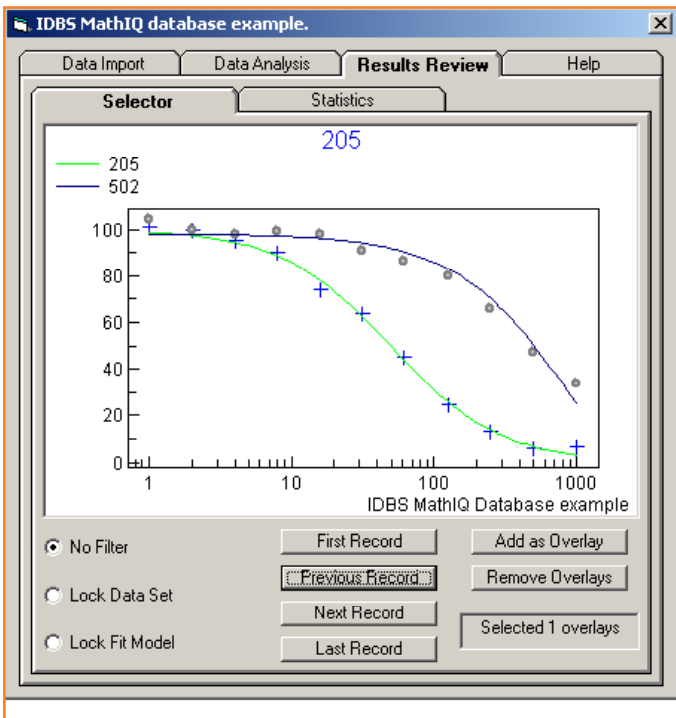
Return accurate, verified results protected by authentication...



Because XLfit is developed using MathIQ, all the functionality associated with the COM objects in XLfit is available for use by developers in MathIQ.

The MathIQ COM objects use the same fitting algorithms as XLfit, meaning that you can rely on the accuracy of your results.

XLfit data results have been verified using the Statistical Reference Datasets (StRD) Project of the National Institute of Standards and Technology (NIST) ([www.itl.nist.gov/div898/strd/index.html](http://www.itl.nist.gov/div898/strd/index.html)).



The licensing COM object allows programmers to prevent unauthorized use of their software. Models that you define or modify using the Model Editor are automatically checked for errors and 'signed' by the application to verify that models have been edited by an authorized source.

This verification process allows program vendors to use only files that they trust, so that problems do not arise from programs that have been modified by an unauthorized source.

Authentication also ensures that software developers can protect the way their software works. The Model Editor allows users to build up systems of equations within one model, which removes the need for the user to perform numerous calculations in order to get the data into a particular format that a model may require.



## Extensive range of curve-fitting models

Versatile graphing, charting and curve fitting...

MathIQ provides developers with the same fit models as found in XLfit.

If one of these models does not suit your requirements, modify the model or create your own using the Model Editor. In addition, you can use the Model Editor COM object to give your application users the ability to create new model files.

MathIQ provides the same wide range of charting and curve-fitting capabilities as XLfit, including over 70 linear and non-linear models.

Predefined categories include:

- Exponential/Log, Power Series, Sigmoidal, Hyperbolic, Yield Density, Linear, Polynomial, Dose Response, Pharmacology and Equilibrium
- Levenberg-Marquardt fitting algorithm
- View multiple separate curve fits in a single graph and combine graphs to view the curve fits in each one superimposed in a single graph
- Analysis of fit results including statistics and parameter values
- Plot multiple points for a dataset.

As well as the predefined models available to you, build your own fit and statistics model libraries including model definitions, equations, parameters and associated comments that can then be distributed to other users.

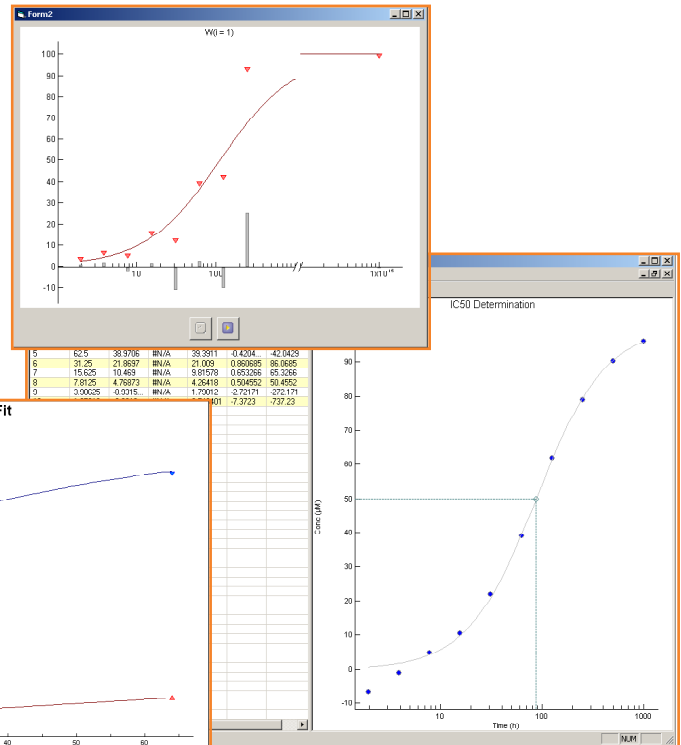
## Complex statistical analysis

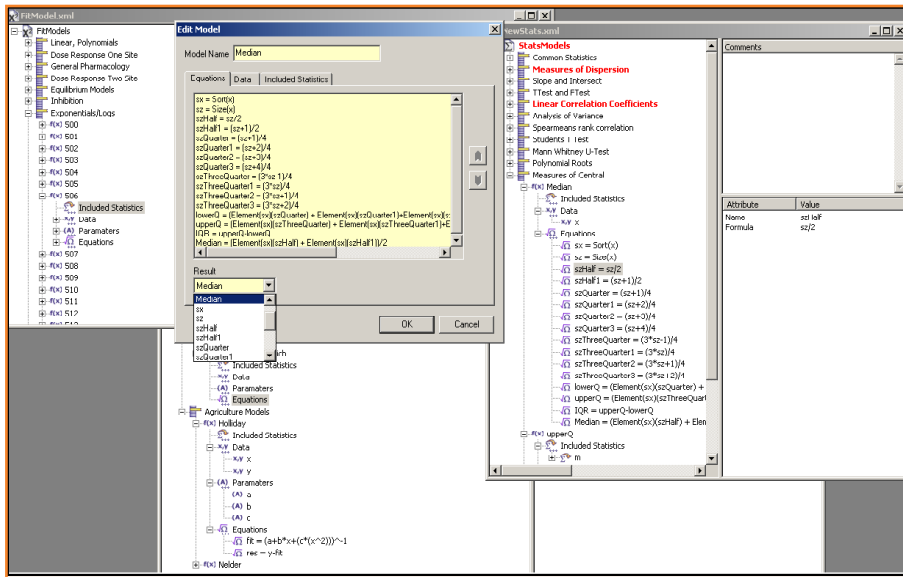
Statistical and mathematical calculations made easy...

Apply complex statistics and mathematics formulae to your data, easily obtaining results with minimal coding. Define the data to be processed, then apply it to one or more mathematical fitting or statistics models to obtain accurate result sets.

MathIQ contains a stats engine COM object that allows programmers access to statistics models stored in any statistics XML model file created using the Model Editor.

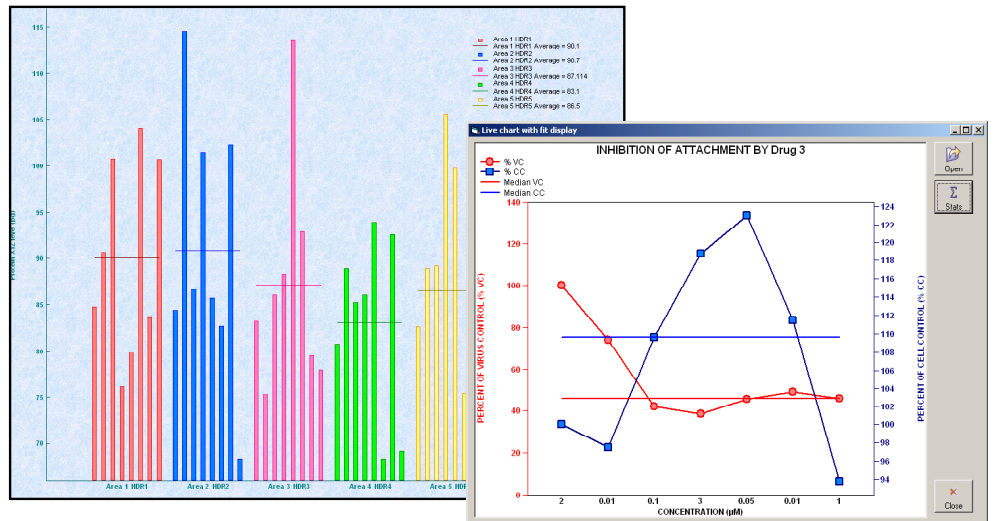
MathIQ has over 30 statistics models that you can apply to any dataset, NOT just data used in fitting. Fit statistics return information such as F and T tests, areas under the curve, confidence intervals and error values relating to parameter values or any point on a curve, while the statistics models include Spearman's Rank Correlations, Student's T-Test, Mann Whitney U-Test, Sum of Squares and ANOVA, and many others.





Build on these models to make them as complex as necessary. Apply any data to a model and return a set of results that can be analyzed further. Code examples within the documentation and an example project give users a clear idea of the steps required to incorporate regression analysis and other analytical methods into their applications. Use the examples to view the results of several coding scenarios and to understand the principles behind

the curve fitting process. Clearly documented examples are also easily accessible in the fully interactive context-sensitive Help, which describes every property, method, event and interface you can use in MathIQ. Results can then be distributed to end users or fed into another analysis task, allowing application developers to define the application workflow process to be as flexible or rigid as required.



## Data visualization

It not only helps you do the mathematics but it also helps with the fun stuff!

All results can be instantly visualized through code using the Chart Object or chart control, which allow developers to incorporate graphs and data representations within their software programs. End users can copy their charts between applications, or into reports, while retaining control over data content and chart display. Incorporating copying methods into your applications will allow users of your product to create visually striking reports.

Graphical data point knockout works directly from the chart objects, giving end users extra control over the data they are using in your application. Use the mouse to zoom in on the objects as well.

www.idbs.com  
info@idbs.com

Guildford, UK  
+44 1483 595000

Alameda, CA  
+1 510 814 4900

Bridgewater, NJ  
+1 908 429 2900

Burlington, MA  
+1 781 272 3355

For more information contact your local account manager or info@idbs.com

All details correct at time of print and may change at any time without notice.  
Copyright© IDBS 2009

