



Creating Interactive Web Pages With MathML

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MathML

- From the “Math Activity Statement” of the W3C Math Working Group:
 - “Designed as an XML application, MathML provides two sets of tags, one for the visual presentation of mathematics and the other associated with the meaning behind equations.”



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- More information at www.w3.org/math



The beauty of MathML

- MathML lends itself to
 - re-use
 - accessibility
 - manipulability
 - CSS and/or XSL
 - JavaScript
 - interactivity
- Examples of interactive MathML at www.dessci.com/en/products/webeq/interactive/



Putting MathML through its paces

- The `maction` element
 - `actiontype` attribute is required; no default value
 - values (not exhaustive):
 - `actiontype="toggle" selection="positive-integer"`
 - `actiontype="statusline"`
 - `actiontype="tooltip"`
 - `actiontype="highlight" my:color="red" my:background="yellow"`
 - `actiontype="link" dsi:href="http://www.mypage.com"`
 - I suspect that's not **action** enough for some of you...



Putting MathML through its paces

- The `maction` element
- Scripting with JavaScript
 - Since MathML is text, it's easily manipulable.
 - Back to our previous example...

Scripting MathML

- Easiest way is to use pre-written modules:

```
<script src=
"../../../../../../webeq35/3.5/scripts/library/wbq.js"></script>
<script src=
"../../../../../../webeq35/3.5/scripts/library/wbq_eqn.js"></script>
<script src=
"../../../../../../webeq35/3.5/scripts/library/wbq_controls.js"></script>
...
var myfunction = new Equation("<math><msup><mi>x</mi>...");
var deriv = new Equation("<math><mn>3</mn>...");
```

WebEQ Solutions Library

- Contains 21 templates & logic modules
 - Get equation from reader and
 - graph it
 - evaluate it
 - compare it against another equation
 - use it to animate part of an HTML page
 - display it



WebEQ Solutions Library

- Contains 21 templates & logic modules
 - Get equation from reader and...
 - Generate an equation based on parameters from reader and...



WebEQ Solutions Library

- Contains 21 templates & logic modules
 - Get equation from reader and...
 - Generate an equation and...
 - Display an equation, Input Control, or Graph Control using user-supplied parameters



WebEQ Solutions Library

- Contains 21 templates & logic modules
 - Get equation from reader and...
 - Generate an equation and...
 - Display an equation...
 - Create quiz consisting of multiple-choice, matching, short answer, or equation answer questions



WebEQ Solutions Library

- Contains 21 templates & logic modules
 - Get equation from reader and...
 - Generate an equation and...
 - Display an equation...
 - Create quizzes
 - Step-by-step exposition of problems



More examples

- More live examples at www.dessci.com
- Handout at www.dessci.com/handouts



Σing it up...

- History of MathML
- MathML's versatility
- MathML's interactive capabilities
- WebEQ's Solution Library