CNXML 0.5 Stress Test*

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Abstract

This module attempts to use all of the CNXML 0.5 tags. It supplies examples of all the tags. People interested in this module would be those who are learning CNXML and those who need an example for testing, such as stylesheets.

This brief paragraph was put in before a section tag to ensure that it was styled correctly.

This equation has been thrown in as a child of content for styling purposes.

$$\cos(2\pi ft) = \frac{e^{i2\pi ft} + e^{-(i2\pi ft)}}{2} \tag{1}$$

1 General Example with Equation

The complex exponential defines the notion of frequency: It is the **only** signal that contains only one frequency component. The sinusoid consists of two frequency components: one at the frequency $+f_0$ and the other at $-f_0$.

This is Euler's relation relating things like e's and cosines

$$\cos(2\pi ft) = \frac{e^{i2\pi ft} + e^{-(i2\pi ft)}}{2} \tag{2}$$

Euler's relation

$$\sin(2\pi ft) = \frac{e^{i2\pi ft} - e^{-(i2\pi ft)}}{2i} \tag{3}$$

Another Euler's relation

$$e^{i2\pi ft} = \cos(2\pi ft) + i\sin(2\pi ft) \tag{4}$$

The complex exponential signal can thus be written in terms of its real and imaginary parts using Euler's relation. Thus, sinusoidal signals can be expressed as either the real or the imaginary part of a complex exponential signal (the choice depends on whether cosine or sine phase is needed) or as the sum of two complex exponentials. These two decompositions are mathematically equivalent to each other.

*Version 2.68: Dec 19, 2008 2:01 pm -0600
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2 Section: ICSA

The Rice Sailing Team is part of a sailing coalition called ICSA which stands for Inter-Collegiate Sailing Association. The ICSA is the governing body for collegete sailing programs in the US. Volunteers of ICSA develop the racing rules. They also organize the national regattas. To be a member of ICSA, a college must pay money to a sub-district.

2.1 SEISA

Rice is a member of the SEISA district of ICSA. SEISA stands for South-Eastern Inter-Collegiate Sailing Association. SEISA is the organization that the South-East colleges compete in. The schools gather to compete for all normal regattas. One or two schools from SEISA will qualify for the National competitions hosted by ICSA.

2.1.1 RUST: Rice University Sailing Team

RUST is Rice's competitive sailing team. Rice is a member of SEISA. This district is made up of several schools, including UT, A&M, A&M Galveston, UNO, Tulane, Kansas, and UWF. The Rice Sailing Club is open to all members of the student community, including graduate students. Beginner and expert sailors alike are encouraged to practice with the team. RUST is a small and easy-going club. There are no attendance requirements, and everyone who wants to sail can sail. Members pay yearly dues to help cover expenses, but every member not only gets to sail, but gets a sailing club T-shirt too!

For the benefit of Mr. Kite, there will be a show tonight on trampoline. The Hendersons will all be there, late Pablo Fanques Fair - what a scene. Over men and horses, hoops and garters, lastly through a hogshead of real fire! In this way Mr. K. will challenge the world! The celebrated Mr. K. performs his feat on Saturday at Bishopsgate. The Hendersons will dance and sing as Mr. Kite flys through the ring - don't be late. Messrs. K and H. assure the public their production will be second to none. And course Henry The Horse dances the waltz!

This equation has been thrown in as a child of section for styling purposes

$$\cos(2\pi ft) = \frac{e^{i2\pi ft} + e^{-(i2\pi ft)}}{2} \tag{5}$$

2.1.2 Section Three Point Two

Section 3.2

2.1.3 Section Three Point Three

Section 3.3

2.1.3.1 four levels down

2.1.3.1.1 five levels down

2.1.3.1.1.1 six levels down

2.1.3.1.1.1.1 seven levels down

2.1.3.1.1.1.1.1 eight levels down

2.1.3.1.1.1.1.1.1 nine levels down

2.1.3.1.1.1.1.1.1.1 how low can you go?

2.1.3.1.1.1.1.1.1.1.1 as low as you want

2.1.3.1.1.1.1.1.1.1.1.1 CNXML is limitless in it's powers

You get the picture!

3 List

Hello and welcome to my list of things to do. The following list is **within** a paragraph, whereas the subsequent ordered list is **preceded** by a paragraph.

- This is an item. The length of this item has been extended for quality assurance of its style upon wrapping, assuming it extends for more than the width of the screen, which is why it may appear that I am dragging this sentence out for a long time..
- This is another item with a list nested inside of it.
  - The next subitem contains a named equation.
  - **Euler's relation**

$$\sin(2\pi ft) = \frac{e^{i2\pi ft} - e^{-(i2\pi ft)}}{2i} \tag{6}$$

This is not a new paragraph. This is also not a new paragraph.

This is a new paragraph.

Example Enumerated List

1. This is an enumerated list item not located within paragraph tags.
2. This is another item with a list nested inside of it.
   - This is a subitem. But the subitem is not enumerated.
   - This is another subitem.
3. Yet another item

A list of notes, definitions, and rules

- WARNING: Sulfuric and Hydrochloric Acid are **very dangerous**. Please handle with caution.
- NOTE: Sulfuric and Hydrochloric Acid are **very dangerous**. Please handle with caution.
  - **Definition 1: note**

    1. A short letter.

    Example

    Bob, Your son called. -Mary

    2. A different meaning for the term.

    Example

    A first example.

Example
A second example.

3.
$$\sqrt{t} = \sum_{n=-\infty}^{\infty} (-1)^n Ap_{T/2}\left(t - n\frac{T}{2}\right) \tag{7}$$

- **Theorem 1:** Pythagorean Theorem
  On a right triangle, the sum of the squares of the sides equals the square of the hypotenus.
  Proof: proof name
  Your favorite proof goes here.

  Example
  This example is a child of the proof. The next one is not.

  Example
  Take a right triangle whose sides are of length 3, 4, and 5. In this case the sum of the square of the two shorter sides is 9+16=25. The square of the hypotenus is 25. So the theorem holds.

This paragraph contains an inline list, i.e. a list with `type="inline`: This item has no name; **Name:** This is item has a name. Next is an inline list with a name**List name First item name:** First item text; 2nd item text blah blah blah. This paragraph also contains a named-item list, i.e. a list with `type="named-item"`:

name of list

- This item has no name, even though it's part of a named-item list fluff fluff fluff fluff fluff fluff fluff fluff fluff fluff fluff fluff fluff fluff fluff fluff fluff

namenamename - This item as a longish name fluff fluff fluff fluff fluff fluff fluff fluff fluff fluff fluff fluff fluff fluff fluff

n - This item has a short name fluff fluff fluff fluff fluff fluff fluff fluff fluff fluff fluff fluff fluff fluff

4 CNXN and Link

If you want to learn more about things in general, you can look at other pages in CNX world. To learn more about CNXML, go to the CNXML 0.5 spec[1] . Then you can write things like `<cnxn>` and `<link>` in CNXML. You will also be able to make CNXN's[2] between things you wrote and things other people have written. For example, to learn more about Rice sailing, you can look right here at the sailing section (Section 2: Section: ICSA) in this module. Or you could link to something even less relevant, say digital communication receivers[3]. To go to a topic which is a bit more relavant to writing `<cnxn>` tags, you could visit the module about using emacs[4]. If you have more questions about Connexions basics, you could look at the FAQ [5]. So if you want to learn more about the world in which you live, Connexions is the place to be.

empty cnxn testing

- To another module: here[6]
- To a subfigure: Figure 4(b)
- To a figure: Figure 2 (Ascii table)

[1] http://cnx.org/aboutus/technology/cnxml/0.5/spec/
[2] "The Basic CNXML": Section Link <http://cnx.org/content/m9000/latest/#cnln>
[3] "Digital Communication Receivers" <http://cnx.org/content/m0520/latest/>
[4] "Using Emacs with PSGML to edit CNXML" <http://cnx.org/content/m9004/latest/>
[5] "Frequently Asked Questions" <http://cnx.org/content/m9001/latest/>
[6] "The Fundamental Signal" <http://cnx.org/content/m0003/latest/>

- To a paragraph: p. 1
- To an equation: (1) (This equation has been thrown in as a child of content for styling purposes.)
- To a note with no type attribute: Note, p. 10
- To a note with type attribute equal to null string: Note, p. 10
- To a note with a type attribute other than "note": Warning, p. 10
- To a footnote: Note, p. 10
- To a rule: Theorem 4, Parseval's Theorem, p. 11
- To an emphasis: p. 5
- To a definition: Definition: "23h8902", p. 7
- To an exercise outside of an example: Exercise
- To a problem outside an example: Problem
- To a solution outside an example: Solution to Exercise (p. 17)
- To a solution (one of many) outside an example: Solution B to Exercise (p. 17)
- To an exercise inside an example: Example 8, Problem 3
- To a problem inside an example: Problem 3
- To a solution inside an example: Solution to Example 8, Problem 1 (p. 7)
- To a solution (one of many) inside an example: Solution B to Example 8, Problem 3 (p. 8)
- To a glossary: Definition: "glossary", p. 17
- To a cnxn:
- To a table caption: Table of Fourier Representations
- To a figure caption: This figure is inside of the p. **??** tag.
- To an example with no numbering Example
- To an example after an example with no numbering Example 9

5 Example

Example 1

As an example of signal complexity, we can express the pulse $p_{\Delta}(t)$ as a sum of delayed unit steps.

$$p_{\Delta}(t) = u(t) - u(t - \Delta) \tag{8}$$

Thus, the pulse is a more complex signal than the step. Be that as it may, the pulse is very useful to us.

Example 2: CNXML can be a pain

This sentence, although it is very **unimportant** and **irrelevant**, contains emphasis within the `<example>` tag. For an example of `<cite>` within `<example>`, see *Things That Are a Pain to Style in CNXML* by Max Starkenburg. For an example of `<emphasis>` within `<cite>` within `<example>`, please see *Things That Are a **Pain in the Butt** to Style in CNXML*, also by Max Starkenburg. This sentence contains `emphasized codeline` within an example. This sentence contains a cnxn (Section 4: CNXN and Link) within an example. This sentence contains a link[7] . This sentence contains a **term**. This sentence contains a `codeline term`.

This paragraph has just been thrown in to ensure that it is styled correctly. It has nothing to say, but is long anwyay, just to make sure that it continues to the next line.

Example 3

```
<html>
<head>
```

[7] http://www.link.com

```
<title>Codeblock within the example tag</title>
</head>

<body bgcolor="#ffffff" link="#990000">
```

Example 4

Example List in Example

1. This is an enumerated list item.
2. This is another item with a list inside of it.
   - This is a bulleted list item
   - This is another bulleted list item

Example 5

Figure 1: This figure is inside of the `<example>` tag.

Example 6

Transform	**Time Domain**	**Frequency Domain**	**Convolution**
Continuous-Time Fourier Series	$L^2([0,T))$	$l^2(\mathbb{Z})$	Continuous-Time Circular
Continuous-Time Fourier Transform	$L^2(\mathbb{R})$	$L^2(\mathbb{R})$	Continuous-Time Linear
			continued on next page

Discrete-Time Fourier Transform	$l^2(\mathbb{Z})$	$L^2([0,2\pi))$	Discrete-Time Linear
Discrete Fourier Transform	$l^2([0,N-1])$	$l^2([0,N-1])$	Discrete-Time Circular

Table 1: Table of Fourier Representations

Example 7

Definition 2: note
A short letter.
Example
Bob, Your son called. -Mary

Theorem 2: Pythagorean Theorem
On a right triangle, the sum of the squares of the sides equals the square of the hypotenus.
Proof: proof name
Your favorite proof goes here.
Example
Take a right triangle whose sides are of length 3, 4, and 5. In this case the sum of the square of the two shorter sides is 9+16=25. The square of the hypotenus is 25. So the theorem holds.

WARNING: Sulfuric and Hydrochloric Acid are **very dangerous**. Please hande with caution.

NOTE: Sulfuric and Hydrochloric Acid are **very dangerous**. Please hande with caution.

Definition 3: 23h8902
aj2390tj
Rule 1:
jaf3j9w0gea ja jdlfasdnfl

6 Exercise

Exercise 1 ***(Solution on p. 17.)***
Express a square wave having period T and amplitude A as a superposition of delayed and amplitude-scaled pulses.

This is an extra paragraph thrown in for styling purposes.

Example 8
Problem 1
Problem Text Here

Solution
Solution Text Here

Example 9
Problem
Exercise/problem nested inside example nested inside example.

Solution
Solution nested inside example nested inside example.

6.1 section for testing purposes only

Problem 2
Problem Text Here

Solution
Solution Text Here

Problem 3
Problem Text Here

Solution A
Solution 1 Text Here

Solution B
Solution 2 Text Here

Exercise 6 ***(Solutions on p. 17.)***

This equation has been thrown in as a child of problem for styling purposes

$$\cos(2\pi ft) = \frac{e^{i2\pi ft} + e^{-(i2\pi ft)}}{2} \tag{9}$$

Exercise 7
This exercise contains a problem but no solution

Example 10
Another exercise in an an example following the other ones

Solution
Solution text

7 Codeline and Codeblock

Try running this in MATLAB.

```
for n=1:1000
y(n) = sum(a.*y(n-1:-1:n-p)) + sum(b.*x(n:-1:n-q));
end
```

The `for` command repeats its contents while incrementing a counter.

```
<!- some codeline and codeblock are emphasized more than others ->
<!- codeline can be linked[8] and cnxn'ed[9] too ->
```

```
codeblock
can be
linked[10]
         and
cnxn'ed[11]
as well
```

8 Definition, Term, Meaning, and Example

Definition 4: note
1. A short letter.

Example
Bob, Your son called. -Mary

2. A different meaning for the term.

Example
A first example.

Example
A second example.

I can also define a new **term** in the middle of a sentence. A term is a new word that is being defined for the first time.

The following definition will be the child of a <para> tag to ensure that it is styled well.

Definition 5: `#!/usr/local/bin/perl/`
The first line of every Perl program

Example
This program will produce a 2-column listing of a file.

```
#!/usr/local/bin/perl/
while( $1 = >STDIN> ) {
chop( $1 );
if( $1 =~ s/^Desig:\s+// ) {
$desig = $1;
next;
```

[8] http://dir.yahoo.com/Computers_and_Internet/Internet/World_Wide_Web/Searching_the_Web/Indices_to_Web_Documents/Random_
[9] "The Basic CNXML": Section Link <http://cnx.org/content/m9000/latest/#cnln>
[10] http://dir.yahoo.com/Computers_and_Internet/Internet/World_Wide_Web/Searching_the_Web/Indices_to_Web_Documents/Random_
[11] "The Basic CNXML": Section Link <http://cnx.org/content/m9000/latest/#cnln>

```
}
if( $1 =~ s/^Area:\s+// ) {
$area = $1;
printf( "%-12s %\n", $desig, $area );
}
}
```

This sentence contains a term which is **half regular** `half codeline`.

Feast your eyes on this: `#!/usr/local/bin/perl/` is a term smack dab in the middle of a sentence! Amazing! This example, `#!/usr/local/bin/perl/` , is a codeline term with emphasis on `/local/`. The next example is a `codeline term with a link`[12] `and cnxn`.

Definition 6: equation

This equation has been thrown in as a child of meaning for styling purposes

$$\cos(2\pi ft) = \frac{e^{i2\pi ft} + e^{-(i2\pi ft)}}{2} \tag{10}$$

9 Note

Chemistry lab was always a lot of fun. We played with a lot of chemicals such as Sulfuric and Hydrochloric acid.

WARNING: Sulfuric and Hydrochloric Acid are **very dangerous**. Please handle with caution.

Chemistry lab was always a lot of fun. We played with a lot of chemicals such as Sulfuri and Hydrochloric acid.

This note does **not** have a string in its type attribute. Please handle with caution.

NOTE: This note does **not** have a type attribute. Please handle with caution.

Chemistry lab was always a lot of fun. We played with a lot of chemicals such as Sulfuric and Hydrocholic acid. [13] Adding another footnote here. [14]

Chemistry lab was always a lot of fun. We played with a lot of chemicals such as Sulfuric and Hydrocholic acid. [15]

10 Rule

Theorem 3: Pythagorean Theorem

On a right triangle, the sum of the squares of the sides equals the square of the hypotenus.

Proof: This proof was thrown into to have a child of equation for styling purposes

$$\cos(2\pi ft) = \frac{e^{i2\pi ft} + e^{-(i2\pi ft)}}{2} \tag{11}$$

[12] http://www.link.com

[13] Sulfuric and Hydrochloric Acid are **very dangerous**. Please handle with caution.

[14] This note was added to test styling.

[15] Sulfuric and Hydrochloric Acid are **very dangerous**. Please handle with caution. Also handle this note with caution, because it contains the attribute `type="FOOTNOTE"`, not `type="footnote"`, and will thus be styled differently.

Example
Take a right triangle whose sides are of length 3, 4, and 5. In this case the sum of the square of the two shorter sides is 9+16=25. The square of the hypotenus is 25. So the theorem holds.

Rule 1:
If $s(t)$ is real, $c_{-k} = c_k^*$

This result follows from the integral that calculates the c_k from the signal. Furthermore, this result means that $Re(c_k) = Re(c_{-k})$: The real part of the Fourier coefficients for real-valued signals is even. Similarly, $\text{Im}(c_k) = -\text{Im}(c_{-k})$: The imaginary parts of the Fourier coefficients have odd symmetry. Consequently, if you are given the Fourier coefficients for positive indices and zero and are told the signal is real-valued, you can find the negative-indexed coefficients, hence the entire spectrum. This kind of symmetry, $c_{-k} = c_k^*$, is known as **conjugate symmetry**. We can phrase the property concisely by saying:

Rule 2:
Real-valued periodic signals have a conjugate-symmetric spectrum.

The Fourier series obeys:

Theorem 4: Parseval's Theorem
Power calculated in the time domain equals the power calculated in the frequency domain.

$$\frac{1}{T}\int_0^T s^2(t)\,dt = \sum_{k=-\infty}^{\infty} (|c_k|)^2 \tag{12}$$

This result is a (simpler) re-expression of how to calculate a signal's power than with the real-valued Fourier series expression for power [16].

11 Cite

Useful information about the color blue can be found in *The Big Book of the Color Blue*.

Emphatic information about emphasizing can be found in *The **Gigantic** Book of Emphasis*.

12 Figures

Here is an example of a figure with a large table inside it. For exhaustive examples of figures, subfigures, and captions in many shapes, sizes, and combinations, see here[17]. Currently, figures cannot be placed in paragraph tags.

[16] "Signal Power", (4) <http://cnx.org/content/m0062/latest/#power>
[17] "Exhaustive Figure and Table Combinations" <http://cnx.org/content/m10221/latest/>

Ascii table

Budget - Comparison by year

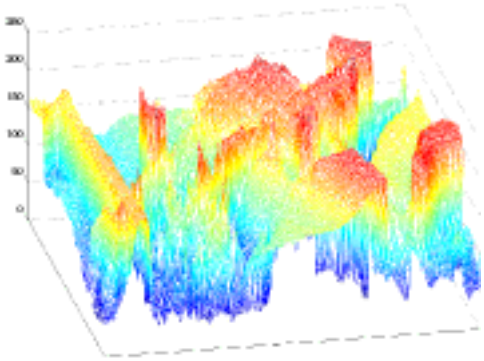
Income	12,293	12,398	14,298
Expenditure	293	398	298
Surplus	12000	12000	14000

Figure 2: And here we can add more information about the table in a caption!

12.1 Subfigures

The Subsequent Figure Does Not Have a Name

(a)



(b)

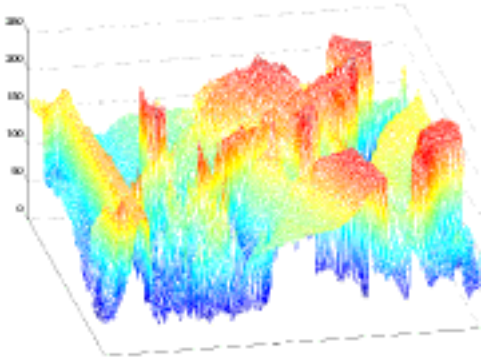
(c)

Figure 3: On the left and right is the classic "Lena" image[18], which is used ubiquitously as a test image. It contains straight and curved lines, complicated texture, and a face. In the middle is a perspective display of the Lena image as a signal: a function of two spatial variables (Theorem 3, Pythagorean Theorem, p. 10). The colors merely help show what signal values are about the same size. In this image, signal values range between 0 and 255; why is that? (a) Lena (b) Lena as a signal (c) Lena again

---

[18] http://www.cs.cmu.edu/∼chuck/lennapg/editor.html

(a)



(b)

Figure 4: This example is the same as the last, except that `orient='vertical'`. So, the subfigures should be on top of each other. (a) Lena (b) Lena as a signal

13 Tables

Here's is a very simple example of a table, similiar to ones seen previously in this module.

Budget - Comparison by year

Item	**Year**		
	1998	**1999**	**2000**
			continued on next page

Income	12,293	12,398	14,298
Expenditure	293	398	298
Surplus	12000	12000	14000

Table 2: This caption put in to test styling.

14 Quotes and Foreign Terms

Two new elements added in CNXML 0.5 are **quote** and **foreign**. A **quote** of type "block" might look like this:

> *I define the **real** as that which holds its characters on such a tenure that it makes not the slightest difference what any man or men may have **thought** them to be, or ever will have **thought** them to be, here using thought to include, imagining, opining, and willing (as long as forcible **means** are not used); but the real thing's characters will remain absolutely untouched. –C.S. Peirce, - **Collected Papers** 6.495.*

Anyone involved in interface design and usability should consider Einstein's axiom (shown here in a **quote** of type 'inline'): Everything should be made as simple as possible, but not one bit simpler.

In order to appear urbane and literate, we should liberally sprinkle our discourse with foreign terms and phrases, such as *Fahrvergnügen* and *sang-froid*.

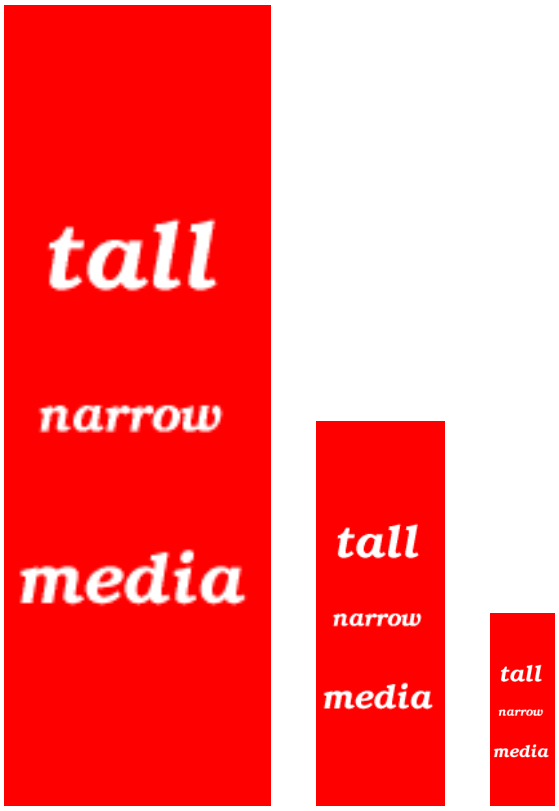
NOTE: It is possible to include a block quote inside a note, with **foreign** elements interspersed:

> *"Freundschaftsbezeigungen" seems to be "Friendship demonstrations," which is only a foolish and clumsy way of saying "demonstrations of friendship." "Unabhängigkeitserklärungen" seems to be "Independencedeclarations," which is no improvement upon "Declarations of Independence," so far as I can see. "Generalstaatsverordnetenversammlungen" seems to be "General-statesrepresentativesmeetings," as nearly as I can get at it – a mere rhythmical, gushy euphuism for "meetings of the legislature," I judge. –Mark Twain, - **"The Awful German Language"***

15 Conclusion

For more information on all of the CNXML used in this module, please refer to the CNXML Spec[19] .

[19] http://cnx.rice.edu/cnxml/0.5/spec/



(a) (b) (c)

Figure 5: An example of how media that appear to be the same size on screen can be a different size in print due to resolution. (a) 72 dpi (b) 150 dpi (c) 300 dpi

Solutions to Exercises in this Module

Solution to Exercise (p. 7)
This is a paragraph that begins a solution. The equation is nested in the paragraph.

$$\sqrt{t} = \sum_{n=-\infty}^{\infty} (-1)^n Ap_{T/2}\left(t - n\frac{T}{2}\right) \tag{13}$$

This is an extra paragraph thrown in for styling purposes.

Solution A to Exercise (p. 8)
The solution is to use Mozilla, and not IE, nor Netscape. The latter two browsers have serious CSS bugs. For an equation inside a solution, see the above exercise.

Solution B to Exercise (p. 8)
Note the ability to have more than one solution per exercise.

Glossary

Definition 7: glossary
A listing of terms together with their meanings.
Example
This very glossary. (Definition: "glossary", p. 17)
See Also: Misses[20]

[20] "Base Rates", Definition 1: "Misses" <http://cnx.org/content/m11171/latest/#missesdef>