Simple Expressions

$VarName
(Expr)
( )
. (one dot: self)
QName (Expr **,** ...)
QName ( )
IntegerLiteral
DecimalLiteral
DoubleLiteral
StringLiteral

Arithmetic Expressions

+ Expr	Expr + Expr
– Expr	Expr – Expr
Expr * Expr	Expr **div** Expr
Expr **idiv** Expr	Expr **mod** Expr

Creating Sequences

Create a sequence from a list of items:
Expr **,** ...
Note: A sequence list must usually be parenthesized.

Repeat over one or more sequences, returning a sequence of results:
for VariableBinding **,** ... **return** Expr

where a VariableBinding is:
$VarName **in** Expr

Create a numeric sequences, from lower bound to upper bound:
Expr **to** Expr

All the items appearing in either sequence:
Expr **union** Expr
Expr | Expr

Only items appearing in both sequences:
Expr **intersect** Expr

All items in the first sequence not in second:
Expr **except** Expr

Comments in XPath Expressions

(: This is a comment within an XPath expr :)

Testing

Test if the condition is satisfied for at least one combination of the bound expressions:
some VariableBinding **,** ... **satisfies** Expr

Test if the condition is satisfied for all of the bound expressions:
every VariableBinding **,** ... **satisfies** Expr

Select one or the other of two possibiliites:
if (Expr **) then** Expr **else** Expr

Either or both of two tests:

Expr **or** Expr	Expr **and** Expr

Test if they are the same node:
Expr **is** Expr

Test if a node appears before or after another:

Expr << Expr	Expr >> Expr

Test an expression's dynamic type:
Expr **instance of** SequenceType

Test if an expression can be converted to a type:
Expr **castable as** AtomicType
Expr **castable as** AtomicType?

Compare two atomic values:

Expr **eq** Expr	Expr **ne** Expr
Expr **lt** Expr	Expr **le** Expr
Expr **gt** Expr	Expr **ge** Expr

Compare all items in one sequence to all items in a second, and return if true for any pair of values:

Expr = Expr	Expr != Expr
Expr < Expr	Expr <= Expr
Expr > Expr	Expr >= Expr

Type Modification Expressions

Use as without converting:
Expr **treat as** SequenceType

Use as, converting as needed and doable:
Expr **cast as** AtomicType
Expr **cast as** AtomicType?

XPath 2.0:
http://www.w3.org/TR/xpath20/
XSL-List:
http://www.mulberrytech.com/xsl/xsl-list

Path Expressions

/	Top level, document root
/ Step	At top level
Step	Relative to current node
// Step	Anywhere within document
Path / Step	Immediately within Path
Path // Step	Anywhere within Path

Where a Step is one of:

Expr	
AxisName::NameTest	
AxisName::KindTest	
@NameTest	(attribute test)
NameTest	(child element test)
KindTest	(child node test)
..	(two dots: parent test)

Followed by zero or more predicates:
[Expr **]**

Where an AxisName is one of:

ancestor	**ancestor-or-self**
attribute	**child**
descendant	**descendant-or-self**
following	**following-sibling**
namespace	**parent**
preceding	**preceding-sibling**
self	

Where a NameTest is one of:
QName
*
NCName:*
*:NCName

Where a KindTest is one of:
attribute (AttributeName **)**
attribute (AttributeName **,** TypeName **)**
attribute (*)
attribute (* , TypeName **)**
attribute ( )
comment ( )
document-node (element ...)
document-node (schema-element ...)
document-node ( )
element (ElementName **)**
element (ElementName **,** TypeName **)**
element (*)
element (* , TypeName **)**
element ( )
node ( )
processing-instruction (NCName **)**
processing-instruction (StringLiteral **)**
processing-instruction ( )
schema-attribute (AttributeName **)**
schema-element (ElementName **)**
text ( )

Names and Types

XML QNames, with or without a colon-separated prefix, is use for all of:
VarName
AttributeName
ElementName
TypeName
AtomicType

A SequenceType is one of:
empty-sequence ( )
KindTest
item ( )
AtomicType

Where KindTest, **item()** or AtomicType can be optionally followed by:

?	(may be empty sequence)\
+	(is a non-empty sequence of the type)
*	(is a sequence of the type, empty or not)

Operator Precedence:

1	**,** (comma)
2	**for some every if**
3	**or**
4	**and**
5	= != < <= > >= **eq ne lt le gt ge is** << >>
6	**to**
7	(two-argument) + –
8	* **div idiv mod**
9	**union** |
10	**intersect except**
11	**instance of**
12	**treat as**
13	**castable as**
14	**cast as**
15	(one-argument) + –
16	/ //
17	step node-test $name (Expr) function-call literal

Relative Location Paths

Relative Location Paths traverse the document from the context node

para
  para element children
  Also – **child::para**

@type
  the **type** attribute
  Also – **attribute::type**

../title
  the **title** element children of the parent

*** except title**
  child elements except **title** elements
  Also – ***[not(self::title)]** (works in XPath 1.0)

ancestor::sec
  all **sec** ancestor elements

ancestor::sec/@n
  all **n** attributes on **sec** ancestor elements

list/(item | step)
  item and **step** element children of **list** children, in document order

list/item, list/step
  item element children of **list** children followed by **step** children of **list** children

preceding-sibling::step
  all preceding sibling **step** elements

preceding-sibling::*[1][self::step]
  the directly preceding sibling element, if it is a **step** (otherwise nothing)

descendant::div[last()]
  the last **div** descendant of the current node

.//div[last()]
  div descendants that are the last child **div** of each of their parents

preceding::pb[1]
  the first (most immediate) preceding **pb**

ancestor::sec//pb intersect preceding::pb
  pb elements inside the same **sec** element as the context node, preceding it

p[normalize-space()]
  p child elements that have a non-whitespace value (text content)

***[not(node())]**
  empty element children (i.e., element children with no node children)

***[not(node() except (comment()|processing-instruction())]**
  element children that are empty (have no children) except for comments or processing instructions

step[position() gt 1]
  all **step** element children but the first

step except *[1]
  step element children but the first

step[position() le 4]
  the first four **step** element children
  Also – **step[position() = (1 to 4)]**

step[position() mod 2]
  odd-numbered **step** children

step[not(position() mod 2)]
  even-numbered **step** children

***[position() le 4] intersect step**
  from the first four element children, the **step** children

ancestor-or-self::*[exists(@lang)][1]/@lang
  the closest **lang** attribute on the context node or an ancestor element

Expressions that are not Location Paths

(@class,'none')[1]
  the **class** attribute, or if it does not exist, the string **"none"**.
  Also –
    if (exists(@class)) then @class else "none"

//*/name()
  the names of all elements, in document order

distinct-values(//*/name())
  the names of all elements, in document order, with duplicates removed

//name/string-join((first, last),' ')
  a sequence of strings constructed from the **name** elements in the document, each one concatenating the values of its **first** and **last** element children, in that order, joining them with spaces
  Also – **for $n in //name return**
    string-join(($n/first,$n/last),' ')

//*/count(ancestor-or-self::*)
  a sequence of numbers representing the depth of each element in the document

max(//*/count(ancestor-or-self::*))
  the maximum depth of all elements in the document (a number in a singleton sequence)

for $stooge in ('Moe','Larry','Curly')
  returncount(//p[contains(.,$stooge)])
  the counts of all **p** elements in the document mentioning each of "Moe", "Larry" and "Curly", in that order

index-of(('Moe','Larry','Curly'), speaker[1])
  if the first **speaker** element child has the value "Moe", then 1; if "Larry", then 2; if "Curly", then 3; otherwise the empty sequence (i.e., no value)

(: You've got to be kidding me. :)
  do nothing. A comment is just a comment.

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XPath 2.0 Quick Reference

See also the "XQuery 1.0 & XPath 2.0 Functions & Operators Quick Reference"

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Absolute Location Paths

Absolute Location Paths traverse the document starting at the top (the root), and can be recognized by their initial / (forwardslash).

/book/bookinfo/abstract
  an **abstract** element child of a **bookinfo** child of the **book** document element
  Also –
  /child::book/child::bookinfo/child::abstract

//para
  all **para** elements in the document
  Also – **/descendant-or-self::*/child::para**
  Also – **/descendant::para**

/descendant::para[1]
  the first **para** element in the document
  Also – **(//para)[1]**

//@order-by
  all **order-by** attributes in the document

//list[exists(ancestor::list)]
  all **list** elements that have ancestor **list**elements

//list[not(ancestor::list)]
  all **list** elements that do not have ancestor **list** elements
  Also – **//list[not(exists(ancestor::list))]**
  Also – **//list[empty(ancestor::list)]**

//(* except title)
  all elements except **title** elements
  Also – **//*[not(self::title)]** (works in XPath 1.0)

//processing-instruction()[not(ancestor::sec/@n = 1)]
  all processing instructions with no **sec** ancestor elements with **n** attributes equal to 1

//para[matches(.,'[X|x]{3}')]
  all **para** elements whose value includes the regular expression **[X|x]{3}**
  Tip – **[X|x]{3}** matches three **X** or **x**characters appearing in a row

//sec[@id = //@rid/tokenize(.,'\s+')]
  all **sec** elements with **id** attributes whose values are also given as a value by a tokenized **rid** attribute anywhere in the document
  Also – **//sec[@id = $rid-values]** where **$rid-values** is **distinct-values(//@rid/tokenize(.,'\s+'))**
  Tip – use **distinct-values(//@rid/tokenize(.,'\s+'))** to remove duplicates from the list of tokenized **@rid** values
  Tip – the regular expression \s+ matches any contiguous sequence of spaces (space, linefeed or tab characters)