If and **while** statements all use Boolean conditions. Generally speaking, these conditions have the same semantics as Boolean conditions in most programming languages. In particular, **and** and **or** are short-circuited. This sheet describes issues which are specific to HL.

FUNCTION CALLS

- The only function calls that can be combined with the 3 Boolean operators **and**, **or**, and **not** are function calls which return Boolean values.
- This will be checked in assignment 4.

STANDARD COMPARISONS

The comparison operators can be use to compare ints and polyns.

When two ints are compared, these operators are simple numeric comparisons and work exactly like in other languages.

When an int and a polyn is compared, the int is converted to its equivalent polyn and compared with the other operand using polynomial comparison.

When two polynomials p and q are compared, the following rules are applied:

- if degree(p) ≠ degree(q), then the polynomial with the highest degree is considered the biggest polynomial
- if p and q have the same degree, then the polynomial with the highest leading coefficient is considered to be the biggest.
- if p and q have the same degree and same leading coefficient, then the leading term is removed from both polynomials and the remainders are compared as just described.

For example:

- $-x^3+x-1 > 100x^2+x-1$ because the degree of the first one is 3 and the degree of the second is 2
- $-100x^2 < 3x^2+100$ because they have the same degree but the leading coeeficient of the first one (-100) is less than the leading coeefficient of the second (3)
- $10x^3-x^2+3x-1 > 10x^3-x^2-2x+5$ because once the common leading terms are removed ($10x^3-x^2$), and the remainders are compared, $3x-1 > -2x+5$

Hints:

- Saying that a>b is really equivalent to saying that a-b>0. In other words, comparisons can be implemented using subtraction.
- Java provides an interface Comparable. Make sure that you HL polynomial class implements this interface.

ISA COMPARISONS

The expression: `term ISA type` is evaluated as follows:

- **true** whenever the term evaluates to a value of the specified type.
- **false** otherwise.