

### Proposed New UIL Test Format for District, Region, and State, beginning in 2015

- 50 questions, 45 minutes
- Last 10 questions (five MC, five free response) on CS theory, general concepts, current state and history of computer science

#### First Fifteen

1. **Number base concepts**, arithmetic, conversion
  2. **Simple literal math expression** with mixed operations
  3. **Simple output** involving print, println, and printf (limited to %d, %f and %s) with escape sequences (\n and \n).
  4. **String class methods**
  5. **Simple Boolean logic** (AND, OR, XOR, NOT) - Java based
  6. **Math class methods** (no advanced topics like trig - save that for later in the test)
  7. **Simple variable expression** with mixed operations
  8. **Conditionals** (if, if/else, switch - not ternary)
  9. **Simple output loop**
  10. **1D primitive array**, basic concepts
  11. **Input concepts**
  12. **Accumulation loop**
  13. **Order of operations** (beyond just the math expressions - testing knowledge of the full Java spectrum of order of precedence)
  14. **Java specific data type concepts**, memory size, max and min limits, wrap around, complements (no 2s complement yet...that would be later in the test)
  15. **ArrayList** – generics only
- 

#### **Topics for last ten, 5 MC, 5 FR, one answer each**

- **Boolean algebra concepts** - truth tables, use of Boolean identities for simplifying expressions.
- **Digital Electronics** - interpretation of symbols, sketching circuits
- **Polish notation** (prefix, postfix, infix) - conversion from one to another
- **2s complement data representation** (limit to 8 bits)
- **Bitwise theory**, operations, shifts, circles
- **Graph theory** - simple paths, cycles, analysis
- **Data structure theory** - stacks, queues, priority queues, binary trees (heaps, search, expression, generic)
- **General CS concepts**, non-language specific - like current memory size limits (from bits and bytes through zettabytes and yottabytes), cloud computing, etc.
- **The general state of CS, past and present** - State of the current CS world, history of CS, early pioneers and significant contributors.