**ACSL**

**American Computer Science League**

**2014 - 2015**

#### Contest #2

### Senior Division

# 1. Prefix/Infix/Postfix

Convert the following infix expression to postfix:

A + B \* ( C + A2 ) – B / ( C + A)



1. **Prefix/Infix/Postfix**

Define a # b = (a+b)/2 (arithmetic mean) and a @ b = √ab (geometric mean). Evaluate the following prefix expression:

(Note: all numbers are single digits)

− # \* 8 **6 / 4 2 − @ \* @ 9 4 3 \* ↑ 5 2 2 ↑ # 8 2 3**

1. **Bit-String Flicking**

Evaluate the following expression:

(LSHIFT-2 (RSHIFT-1 01101)) OR

( (LCIRC-2 (RSHIFT-1 01110)) AND (NOT 01100))

**4. Bit-String Flicking**

Solve for X (5-bits) in the following equation. How many unique

solutions are there?

(RCIRC-2 (LSHIFT-1 (NOT X))) = 00101

1. **LISP**

Evaluate the following LISP expression:

(ADD (MULT 3 (EXP 2 3))(MULT(EXP 2 2)(SUB(MULT 5 3) 6))

(EXP 2 (SUB (9 3))))