



## American Computer Science League

2019-2020

Contest #2

### INTERMEDIATE DIVISION

#### 1. Prefix/Infix/Postfix Notation

Convert the following infix expression to a postfix expression:

$$\frac{A + B^2}{A^2} - \frac{AC}{B} + ABC$$

1.

#### 2. Prefix/Infix/Postfix Notation

Evaluate this prefix expression: (Note: all numbers are single digits)

+ - \* 4 - 8 / 6 3 / + ↑ 3 2 ↑ 4 2 5 // ↑ 6 3 \* 4 3 2

2.

#### 3. Bit-String Flicking

Evaluate the following 6-bit expression:

(LSHIFT-1 (LCIRC-2 (RSHIFT-1 (NOT 100001))))

3.

#### 4. Bit-String Flicking

Solve for X (5 - bit string):

(LCIRC-2 (RCIRC-4 X OR LSHIFT-1 01001 AND NOT 01010)) = 10011

4.

#### 5. LISP

Evaluate the following LISP expression:

(CAR (CDR (CAR (CDR '(1 (2 (3 4)(5 6) 7) 8)))))

5.