

American Computer Science League

2023-2024 • Contest 2: Short Problems • Junior Division

1. Prefix/Infix/Postfix Notation Evaluate the following prefix expression if all numbers are single digits: $- + 2 * 3 8 / * 6 2 3$	A. 12 B. 20 C. 22 D. 25 E. 30
2. Prefix/Infix/Postfix Notation Convert the following infix expression to postfix: $\frac{A+B}{C-1} + \frac{2A-3}{D}$	A. $AB+C1-/2A3*-D/+$ B. $AB+C1-/2A*3-D/+$ C. $ABC1-+/2A*3-D/+$ D. $AB+C1-/2A*3-D+/$ E. $AB+C1-/2A*3D-/+$
3. Bit-String Flicking Evaluate: $00110 \text{ OR } 01100 \text{ XOR } 11010$	A. 01001 B. 11001 C. 00110 D. 01010 E. 10110
4. Bit-String Flicking Evaluate: $(\text{LSHIFT-1 } 01110) \text{ AND } (\text{RCIRC-2 } (10110 \text{ OR NOT } 10101))$	A. 10100 B. 11111 C. 11100 D. 00011 E. 01001

5. What Does This Program Do? (Looping)

What is the following program's output?

```
p = .01
d = 1
t = .01
while t < d
    d = d + 1
    p = p * 2
    t = t + p
end while
output d
```

- A. 7
- B. 8
- C. 9
- D. 10
- E. 11