JUNIOR DIVISION SOLUTIONS

1. Prefix/Infix/Postfix Notation a + b * c - 2 * (a * b - c) / (a ^ 2 - b ^ 2) = a + (b * c) - 2 * ((a * b) - c) / ((a ^ 2) - (b ^ 2)) = a + (b c *) - 2 * ((a b *) - c) / ((a 2 ^) - (b 2 ^)) = a + (b c *) - 2 * (a b * c -) / (a 2 ^ b 2 ^ -) = a + (b c *) - (2 a b * c - *) / (a 2 ^ b 2 ^ -) = a + (b c *) - (2 a b * c - * a 2 ^ b 2 ^ - /) = a b c * + 2 a b * c - * a 2 ^ b 2 ^ - / -	**1.** As shown
2. Prefix/Infix/Postfix Notation + - / + 8 ^ 4 2 ^ 2 2 / * 3 2 6 / * / 8 4 2 4 = + - / + 8 (^ 4 2)(^ 2 2) / (* 3 2) 6 / * (/ 8 4) 2 4 = + - / + 8 (4 ^ 2)(2 ^ 2) / (3 * 2) 6 / * (8 / 4) 2 4 = + - / (+ 8 16) 4 (/ 6 6) / (* 2 2) 4 = + - / (8 + 16) 4 (6 / 6) / (2 * 2) 4 = + - (/ 24 4) 1 (/ 4 4) = + - (24 / 4) 1 (4 / 4) = + (- 6 1) 1 = + (6 - 1) 1 = (+ 5 1) = (5 + 1) = 6	**2.** 6
3. Bit-String Flicking 10110 OR 11001 AND 01011 = 10110 OR (11001 AND 01011) = 10110 OR 01001 = 11111	**3.** 11111

4. Bit-String Flicking
 	
(RSHIFT-1 (LCIRC-2 (LSHIFT-3 (RCIRC-2 10101))))
   = (RSHIFT-1 (LCIRC-2 (LSHIFT-3 01101)))
   = (RSHIFT-1 (LCIRC-2 01000))
   = (RSHIFT-1 00001)
   = 00000
	4. 00000

5. What Does This Program Do? - Loops A Mersenne Prime is a prime number that is one less than a power of 2. This program first checks to see if the inputted number is prime (B loop). They are: 5, 7, 31, 101, and 127. If it is, it then checks to see if it is one less than a power of 2. (I loop). There are 3: 7, 31, and 127.	**5.** 7, 31, 127