RELAY #1

R1-1. The product of five consecutive positive integers is divisible by both 13 and 31. If that product is as small as possible, compute the smallest of the five integers.

R1-2. Let T = TNYWR and let $K = \frac{T-1}{15}$.
Compute the value of $(1-i)^{2K}$.

R1-3. Let T = TNYWR.

Three vertices of a cube are connected to form a triangle. Compute the maximum possible perimeter for this triangle if the edge of the cube is T.

Relay #2

R2-1. Compute the largest integer less than 125 that has a prime number of distinct (positive) factors.

R2-2. Let T = TNYWR and let $K = T/11$.

If $\log_n 2 = K$, and $n > 1$, compute $\log_4 n$.

R2-3. Let T = TNYWR and let $r = 1/T$.

For integer $n \geq 0, F(n+1) = x \cdot F(n) + 1$, and $F(0) = 1$.

Express $(x-1) \cdot F(r)$ as a polynomial in x with integer coefficients.

[Note: The answer is *not* to be expressed in factored form, and is to be simplified as much as possible!]