RELAY 1

R1-1. Compute the integer N, where $(3!)(5!)(7!) = N!$

R1-2. Let t be TNYWR. In isosceles triangle ABC, base $BC = t$ and angle $A = 36°$. Compute the length of the bisector of angle B.

R1-3. Let t be TNYWR. Compute the *tens* digit of $(1985)(1986)(1987)^t$.

R1-4. Let t be TNYWR. If $4a = 5b = 6c$, compute the ratio of the integers $a:b:c$, where a, b, and c are the smallest possible set of positive integers with this property.

$$\text{PASS BACK THE } INTEGER \ \frac{a + b + c + 8}{t}.$$

R1-5. Let t be TNYWR. The roots of $tx^2 - 7x + k = 0$ are $\sin A$ and $\cos A$. Compute the numerical value of k.

RELAY 2

R2-1. *How many* 2-digit numbers, neither of whose digits is 0, are such that the product of their digits is a square?

R2-2. Let t be TNYWR. If x and y are real and $|x + y - t| + |x - y - 5| = 0$, compute the numerical value of y.

R2-3. Let t be TNYWR. The graph of $y = f(x)$ is symmetric about the line $x = 4$ and about the point $(8,t)$. If $(3,7)$ is on the graph, then $(11,k)$ must also be on the graph. Compute k.

R2-4. Let t be TNYWR. The 4-digit (base 10) numeral $\underline{A} \ 3 \ \underline{t} \ \underline{B}$ is a multiple of 99. Compute the digit $\underline{A}$.

R2-5. Let t be TNYWR. In triangle ABC, $\cos A = \dfrac{t}{5}$ and $\cos B = \dfrac{5}{13}$. Compute $\cos C$.