

Interval Mod

Let $f(x) = (x \bmod p) \bmod q$ and $g(x) = (x \bmod q) \bmod p$.

Let $A(l, r) = \min(\sum_{l \leq i \leq r} f(a_i), \sum_{l \leq i \leq r} g(a_i))$ and $B(l, r) = \sum_{l \leq i \leq r} \min(f(a_i), g(a_i))$.

The answer is $\min_{i=1}^{n-k+1} (A(i, i+k-1) + B(1, i-1) + B(i+k, n))$.