On rappelle les formules suivantes :

$$\begin{array}{l} \sum_{k=1}^n k = \\ \sum_{k=1}^n k^2 = \end{array} \quad \left| \quad \begin{array}{l} \sum_{k=0}^n q^k = \\ \sum_{k=p}^n a = \end{array}$$

Exercice 1

Calculez les sommes suivantes :

$$\begin{array}{l} 1. \sum_{k=0}^n 2^k \\ 2. \sum_{k=0}^n \frac{1}{3^k} \end{array} \quad \left| \quad \begin{array}{l} 3. \sum_{k=1}^n \frac{1+k}{2} \\ 4. \sum_{k=0}^n 3^{n-k} \end{array}$$

Exercice 2

Calculez les sommes suivantes :

$$\begin{array}{l} 1. \sum_{k=0}^{n-2} 2^k \\ 2. \sum_{j=1}^{n-1} 3^j \end{array} \quad \left| \quad \begin{array}{l} 3. \sum_{i=1}^{n+2} (i^2 - 2) \\ 4. \sum_{k=0}^{p-1} \frac{1}{2^k} \end{array} \quad \left| \quad \begin{array}{l} 5. \sum_{k=0}^n \frac{2^k - 1}{5} \\ 6. \sum_{j=1}^{n+2} n \end{array}$$

Exercice 3

Calculez les sommes suivantes :

$$\begin{array}{l} 1. \sum_{k=1}^n k(k+1) \\ 2. \sum_{j=0}^n 2^j 5^{n-j} \end{array} \quad \left| \quad \begin{array}{l} 3. \sum_{k=0}^n \frac{3^k + 1}{2^{2k}} \\ 4. \sum_{k=1}^n k(n-k) \end{array} \quad \left| \quad \begin{array}{l} 5. \sum_{k=1}^n \sum_{j=1}^k j \\ 6. \sum_{k=n+1}^{2n} k + 2^k \end{array}$$

Exercice 4

Calculez les sommes suivantes pour tout entier n approprié :

$$\begin{array}{l} 1. \sum_{k=0}^{2n+1} (-1)^k \\ 2. \sum_{k=-2}^7 -2 \end{array} \quad \left| \quad \begin{array}{l} 3. \sum_{k=1}^{n-1} (k+1)^2 \\ 4. \sum_{k=0}^n 2^{-3k} \end{array} \quad \left| \quad \begin{array}{l} 5. \sum_{k=0}^n \sqrt{3^k} \\ 6. \sum_{k=1}^n (n-k)^2 \end{array}$$